STORM WATER DRAIN NO. 178
EQUESTRIAN ESTATES - PHASE 1
TO
THE CITY OF WICHITA, KANSAS

GENERAL NOTES:

1. Utility service lines, poles, valve boxes, meters and etc. are to be adjusted as necessary by others prior to construction unless the plans specifically call for their adjustment by the Contractor. Existing utilities and their location, as shown on the plans, represent the best information obtainable for design. The Contractor will be required to work around existing utilities within the right-of-way which do not conflict with proposed construction.

2. A saw cut of at least one-half the depth of existing surface courses or one-fourth the depth of the existing total pavement thickness shall be provided at locations where proposed construction abuts an existing surface course or pavement for which partial removal of that surface or pavement is required. Sawed joint to facilitate removal within three (3) feet of existing joints will not be permitted and for such instances the limits of removal shall extend to the existing joint. Such saw cuts will not be paid for directly and this cost shall be considered as subsidiary to the project costs.

3. Rubble from the removal of miscellaneous structures and excess excavation which is to be wasted shall be disposed of on sites to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance and site location. Locations that, in the opinion of the Engineer, will leave an unsightly appearance will not be approved.

   All sutible excavation shall be wasted on low lying lots within the addition before any material is disposed of off site.

   All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a flood plain would require a Kansas State Board of Agriculture permit. Any material dumped in waters of the United States or wetlands is subject to U.S. Corps. of Engineers permitting regulations. Any material buried or stockpiled beyond approved construction limits would require additional archaeological investigations unless buried in a previously approved borrow location.

4. Trees and shrubs in public right-of-way which are in direct conflict with proposed new construction shall be removed by the Contractor with the Engineer's approval. Trees and shrubs which are not in direct conflict with proposed new construction shall be saved and protected from damage.

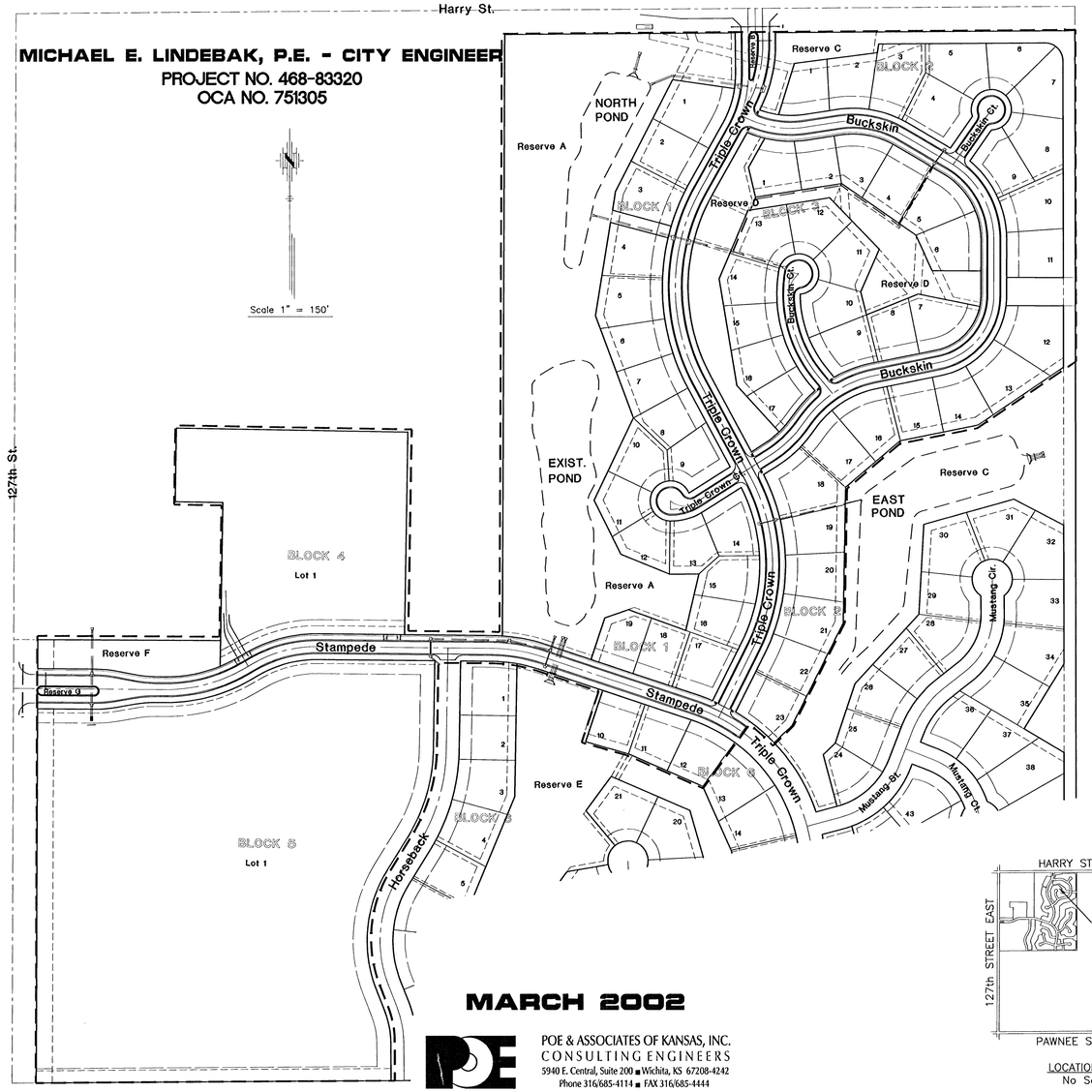
5. The Contractor shall be responsible for preserving property irons. The Contractor will be required to reestablish any property irons which are damaged or destroyed by his construction operations. Such irons shall be reestablished by a licensed land surveyor in accordance with state laws.

6. Trees are to be removed as needed. The cost is subsidiary to site clearing costs.

7. All disturbed areas within street right-of-ways shall be seeded with temporary rye grass within 14 days of disturbance at a rate of 250 lbs. per acre.

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER

PROJECT NO. 468-83320
OCA NO. 751305



Scale 1" = 150'

INDEX

BOOKED
11-7-02
MCG
C-232

JAMES M. UBER
LICENSED
14698
3-25-02
KANSAS
PROFESSIONAL ENGINEER

BENCH MARKS

(U.S.G.S. Datum)

1. Railroad spike in power pole, approximately 25' south and 30' east of W 1/4 Corner, Section 35-27-2E.
   Elev. 1349.65

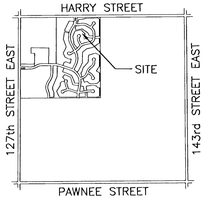
2. Square on south hub guard of RCBC just west of NW Corner of Section35-27-2E.
   Elev. 1311.90

EARTHWORK SUMMARY

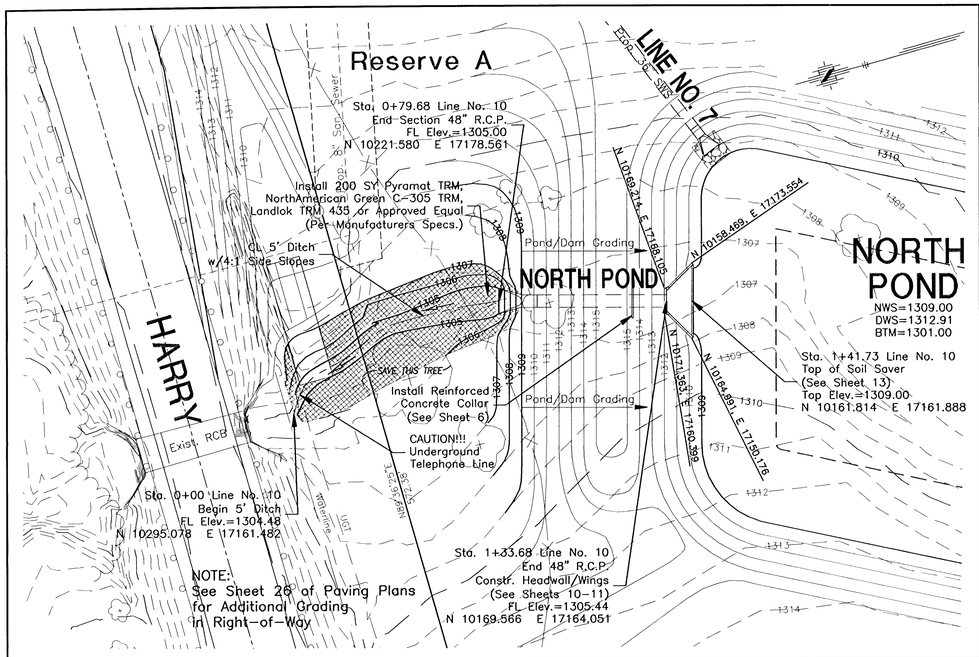
Pond Excavation	53,460 C.Y.
Pond Loose Fill	7,704 C.Y.
Waste	45,756 C.Y.

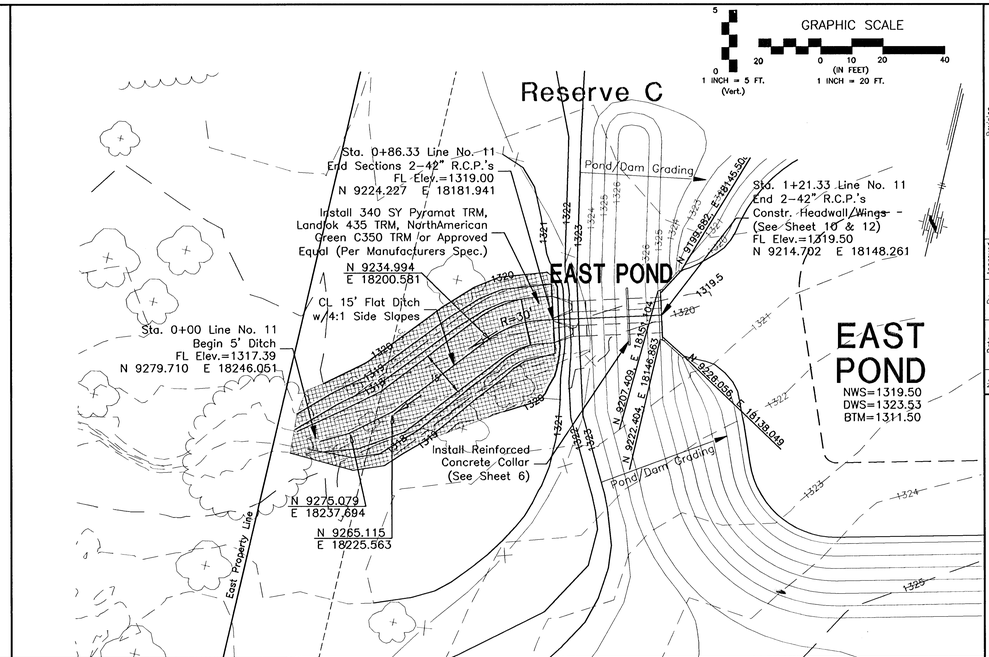
MARCH 2002

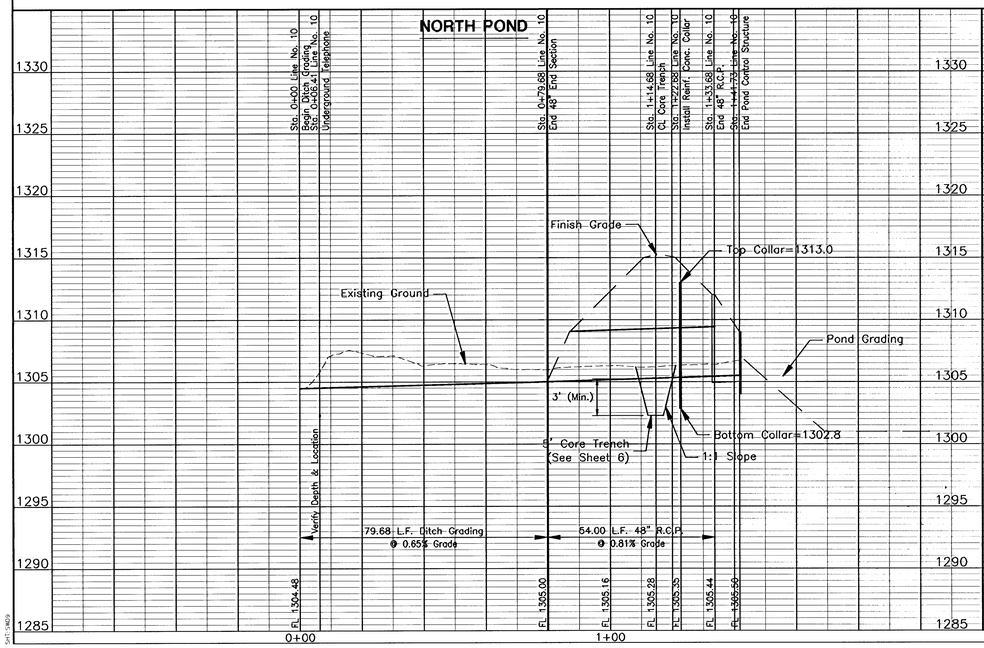
POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

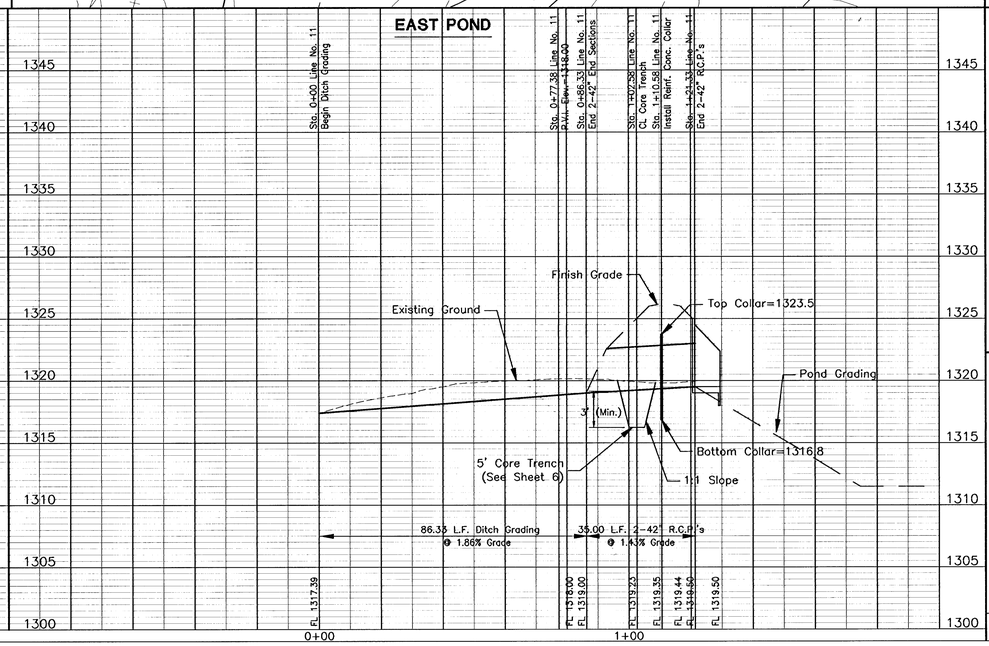


LOCATION MAP
No Scale









No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
POND OUTLET STRUCTURES

CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
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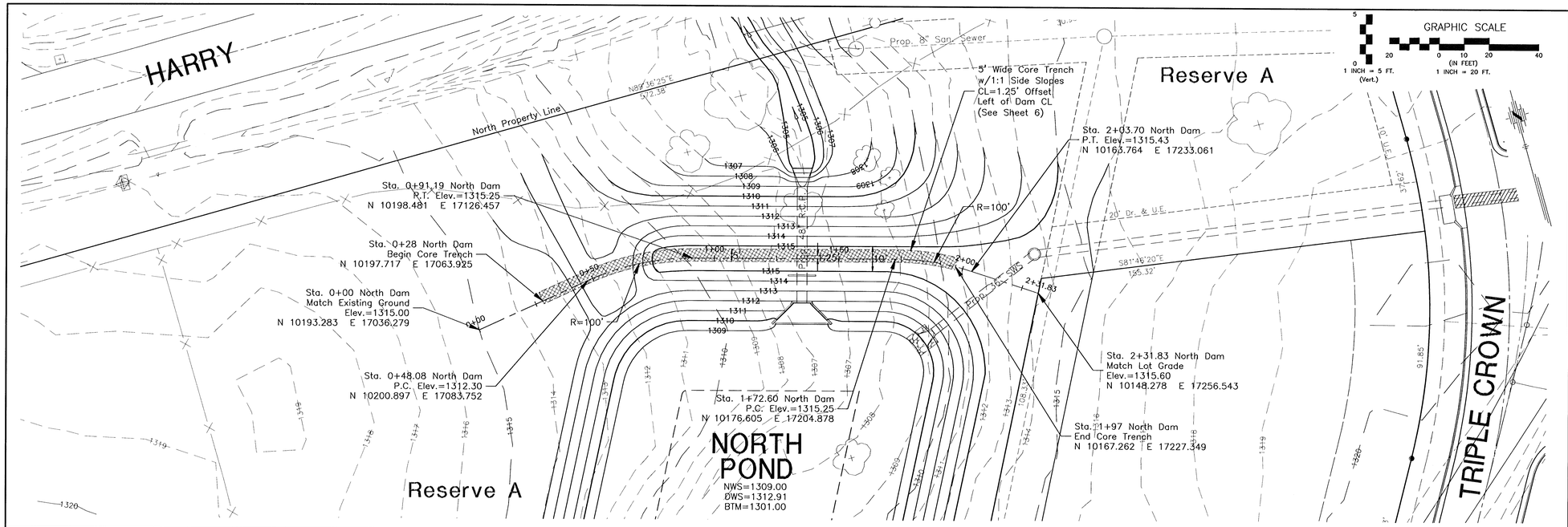
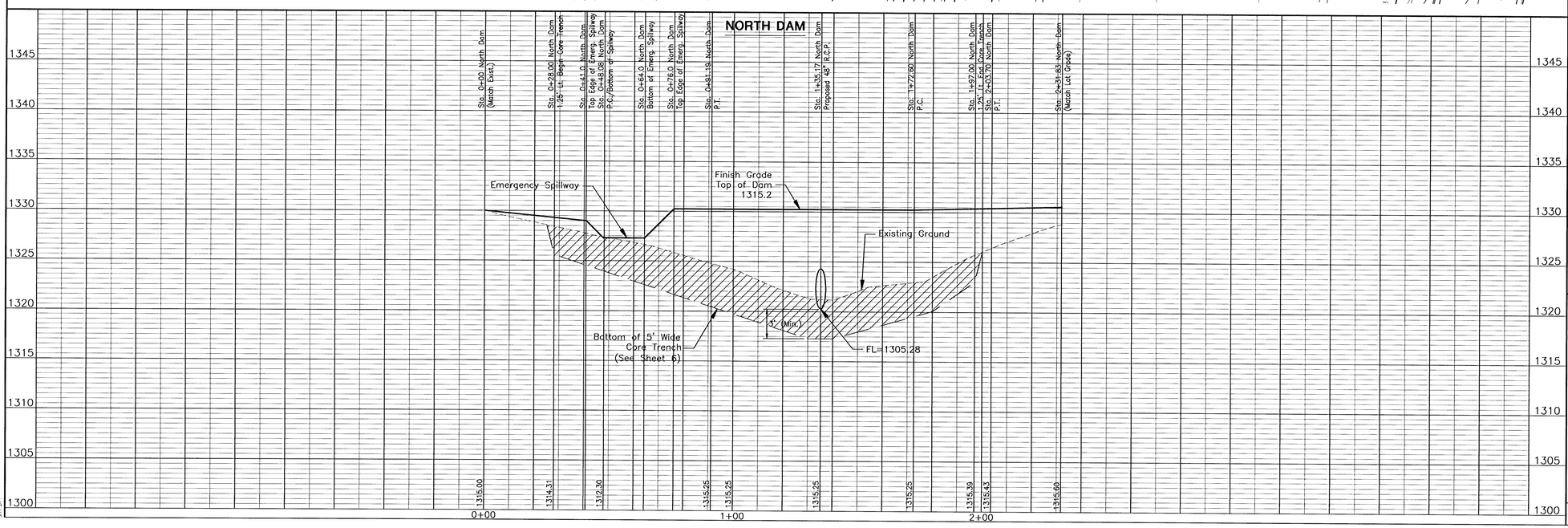
FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 2 of 20





No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
NORTH DAM PROFILE
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Proj.# 468-83320 C.C.A.# 751305

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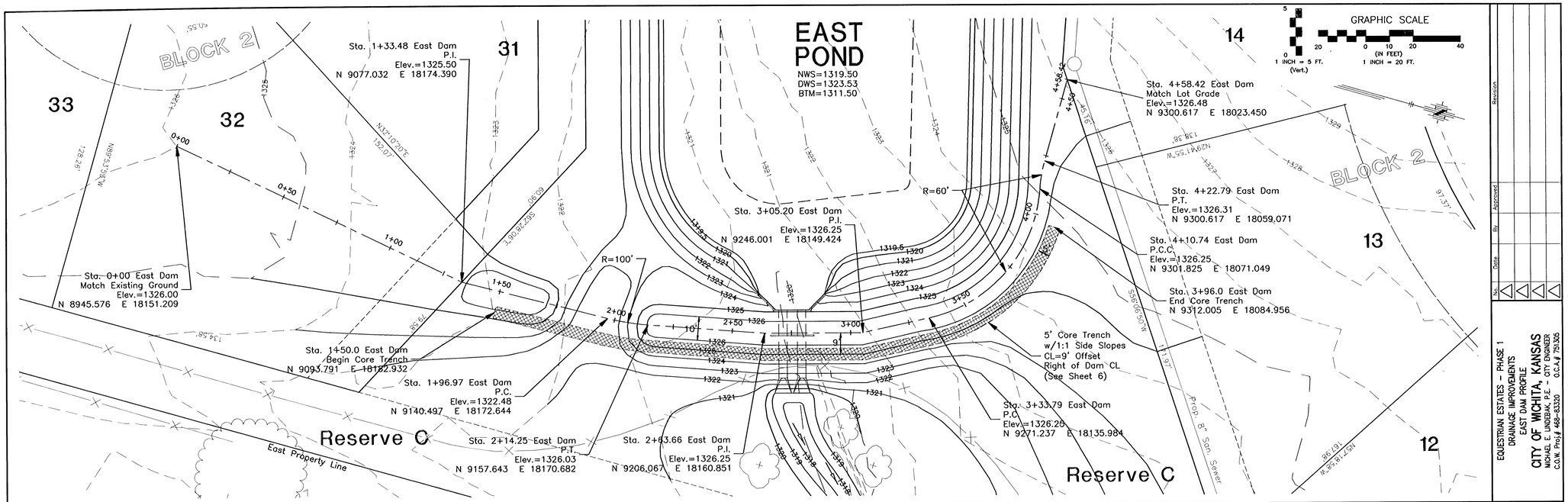
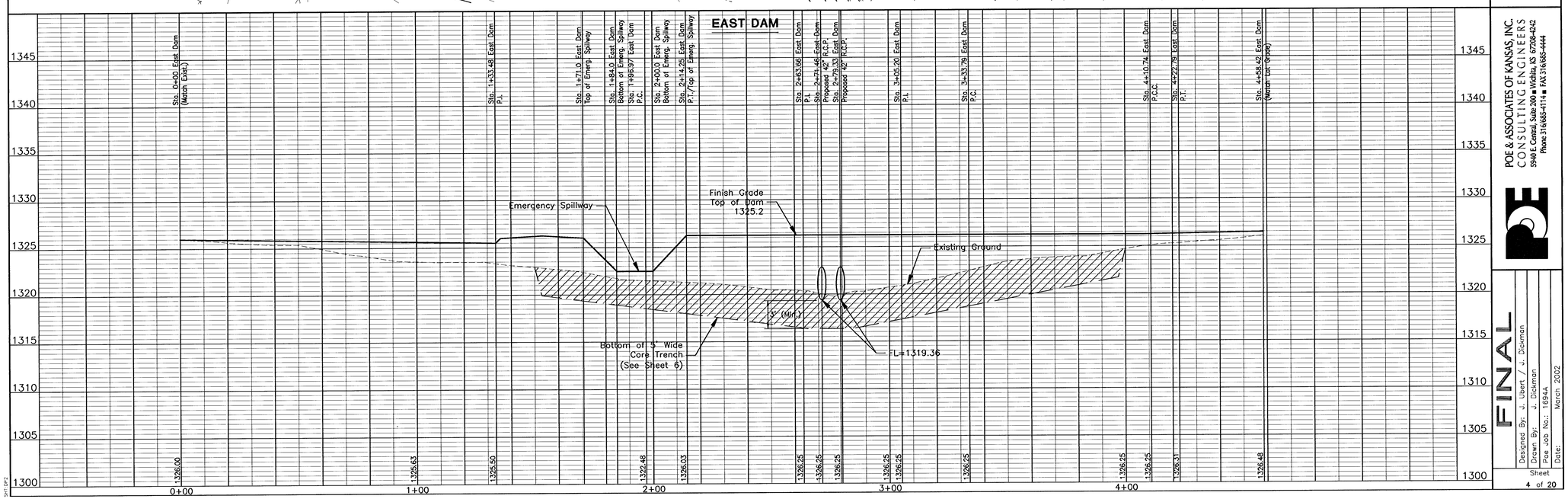
Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet
3 of 20





EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
EAST DAM PROFILE

CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Proj.# 488-83320 O.C.A.# 751305

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Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 4 of 20

No. | Date | By | Approved | Revision

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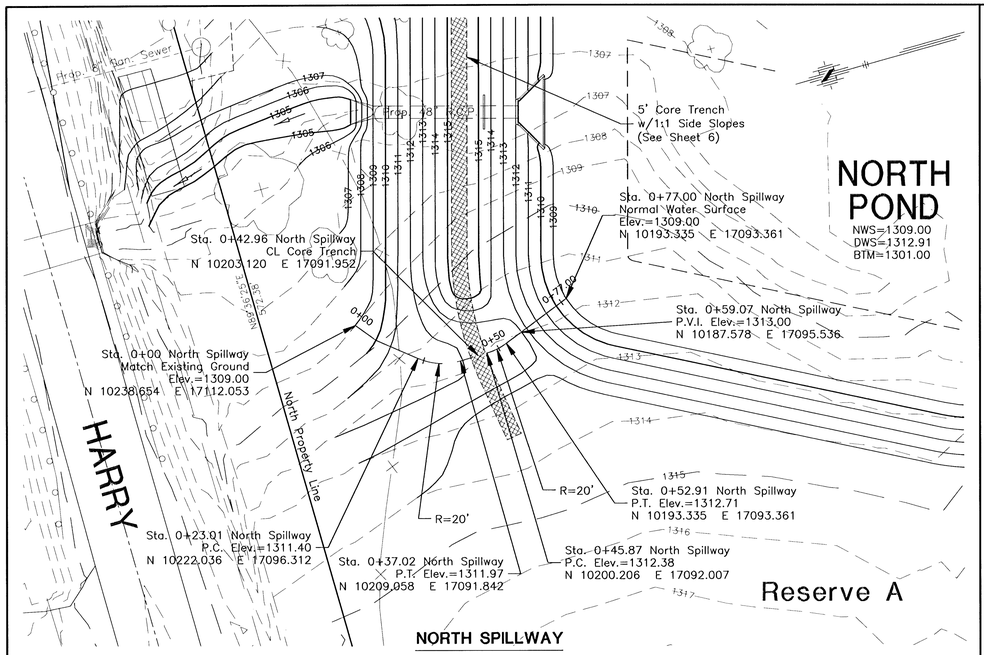
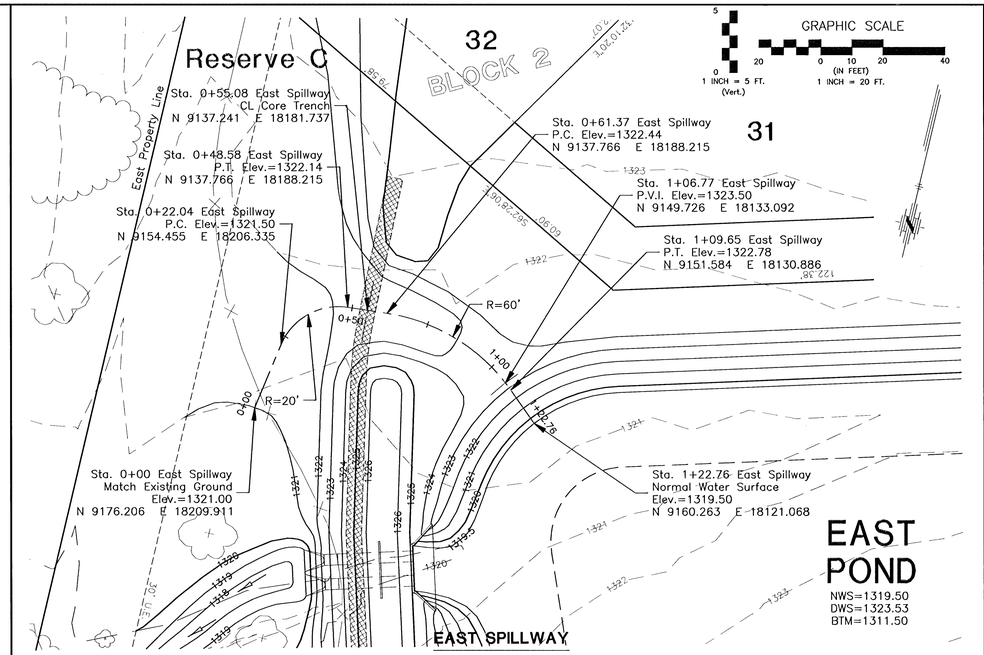
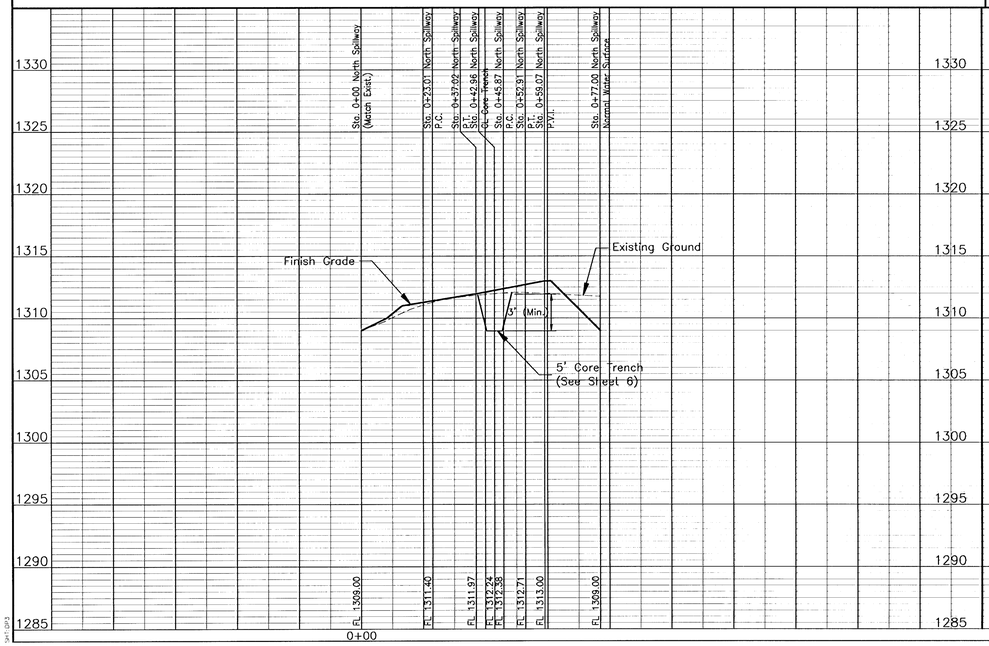


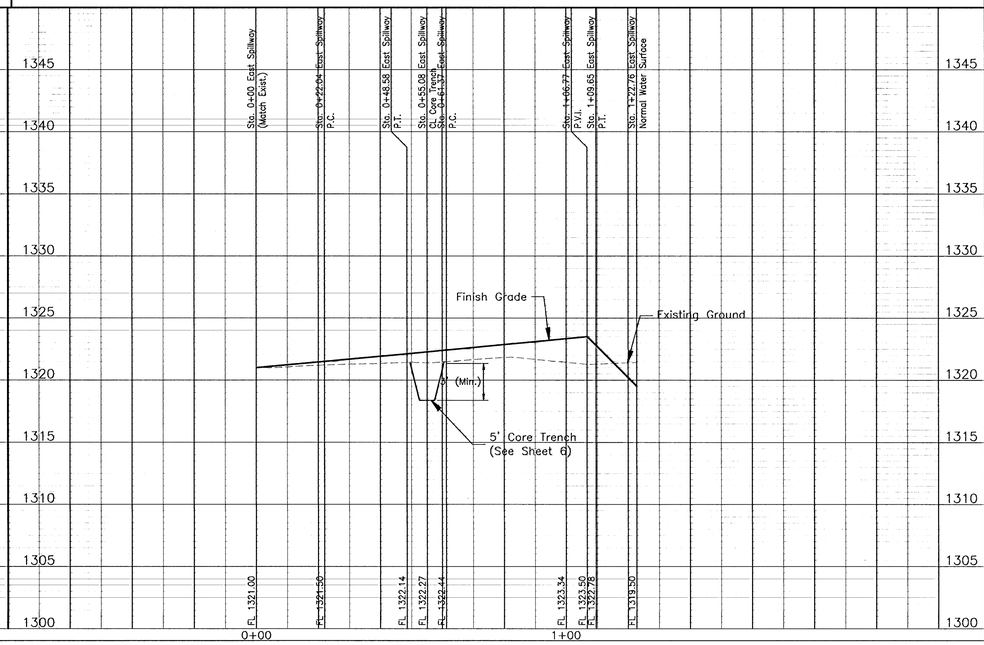
NORTH SPILLWAY



EAST SPILLWAY

GRAPHIC SCALE
0 5 20
0 10 20 40
(IN FEET)
1 INCH = 5 FT. (Vert.)
1 INCH = 20 FT.





No.	Date	By	Approved	Revision
1				
2				
3				
4				

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
EMERGENCY SPILLWAY PROFILES
CITY OF WICHITA, KANSAS
MICHAEL E. LINEBAK, P.E. - CITY ENGINEER
C.O.W. Proj.# 468-83320 O.C.A.# 791305

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FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 16944
Date: March 2002

Sheet 5 of 20

GENERAL NOTES

CORE TRENCH

The core trench shall be constructed along the proposed dam centerline over the entire length of the dam. The core trench shall be excavated to a depth of at least 3 feet below the bottom of the concrete box and the natural grade along the dam alignment. The core trench should have a width of about 5 feet.

The core trench shall be backfilled with cohesive soils having a plasticity index greater than 25 (such as the on–site fat clays in the reservoir area) and placed and compacted as recommended below. Granular soils and low plasticity clays are not considered suitable for the core trench.

SITE PREPARATION

The contractor shall strip the organic topsoil in the dam embankment area. After performing all cuts and excavations required, the exposed subgrade soils in the proposed dam and core trench areas should be proofrolled to locate zones that are soft or unstable. Proofrolling should be conducted with a loaded, tandem–axle dump truck, scraper, or other heavy, rubber–tired, construction vehicle weighing at least 25 tons. The proofrolling should consist of several overlapping passes over an area in mutually perpendicular directions. The subgrade in areas where excessive rutting or pumping occurs during proofrolling should be removed and replaced with suitable fill, as described below, if it cannot be satisfactorily densified in place.

After proofrolling the subgrade and prior to placing new fill, we recommend the exposed soils be scarified to a depth of about 9 inches. The subgrade moisture should be adjusted to meet the recommendations presented in the "Engineered Fill" section of this report and the subgrade compacted to at least 95% of their maximum dry density (by ASTM D–698). Fill materials could then be constructed on the compacted subgrade.

ENGINEERED FILL

All new fill should consist of approved, on–site or off–site soils that are free of organics and deleterious materials. The soils should be constructed in maximum lifts not exceeding 9 inches in loose thickness and compacted to at least 95%, of their maximum dry density as determined by the standard Proctor procedure, ASTM D–698.

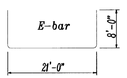
The moisture content at which the soils should be compacted is given as follows:

- Cohesive soils with a plasticity index (PI) greater than or equal to 30 (typical of the on–site soils) should be placed at a moisture content of at least 2% above their optimum moisture content (ASTM D–698).
- Cohesive soils with a PI less than 30 should be placed at a moisture content above their optimum moisture content.
- Granular soils should be placed at workable moisture content.

2–42" COLLAR RE–BAR SCHEDULE

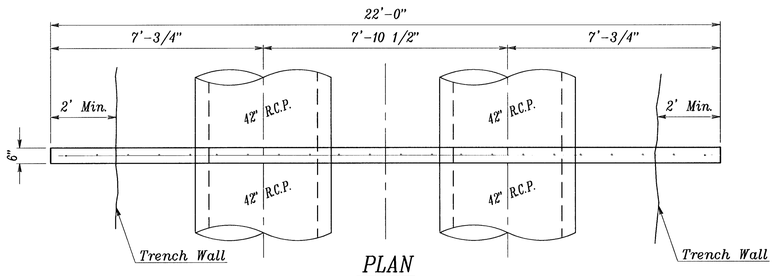
Mark	Shape	No.	Length	Weight
E		1	37'–0"	25.46
F		12	7'–9"	63.98
G		4	21'–6"	59.17
H1		14	3'–8"	35.32
H2		6	2'–4"	9.63
I		12	1'–10"	15.14
Total Rebar			209	Lbs.
Concrete			2.91	C.Y.

All Concrete Reinforcement to be #4 bars.

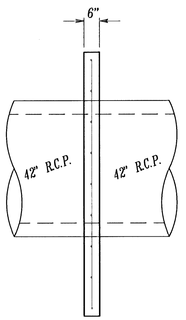


BENDING DIAGRAM

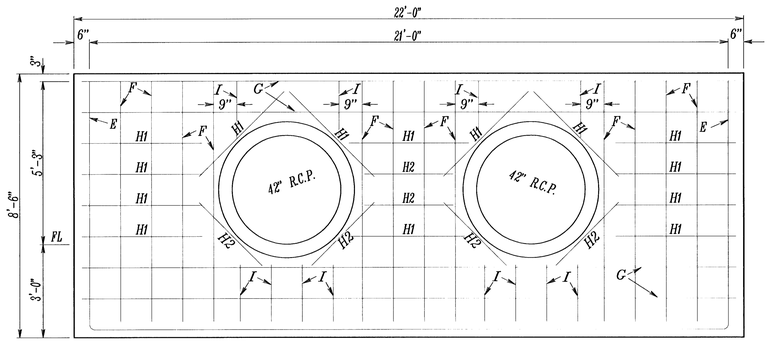
NOTE: EXTEND COLLAR A MINIMUM OF 2' INTO UNDISTURBED SOIL.



PLAN



SECTION



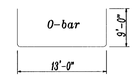
FRONT

NOTE: ALL REINFORCING STEEL SHALL BE SPACED 12" UNLESS OTHERWISE NOTED

48" COLLAR RE–BAR SCHEDULE

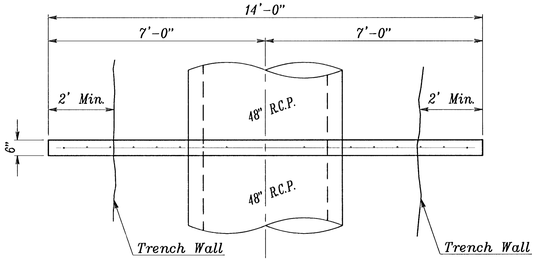
Mark	Shape	No.	Length	Weight
O		1	31'–0"	21.33
P		10	8'–9"	60.20
Q		5	13'–6"	46.44
R1		10	4'–1"	20.09
R2		6	2'–8"	11.01
S		6	1'–10"	7.57
T		4	4'–10"	13.30
Total Rebar			180	Lbs.
Concrete			2.11	C.Y.

All Concrete Reinforcement to be #4 bars.



BENDING DIAGRAM

NOTE: EXTEND COLLAR A MINIMUM OF 2' INTO UNDISTURBED SOIL.



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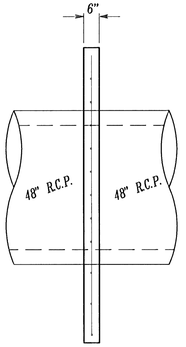

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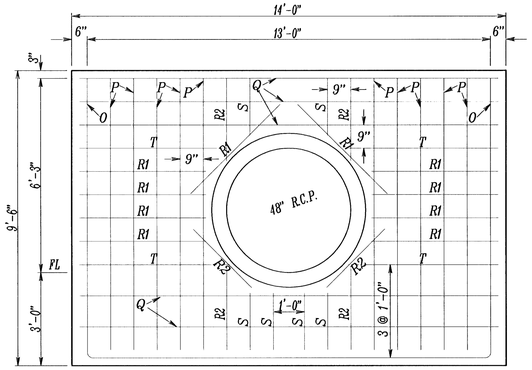

FRONT

NOTE: ALL REINFORCING STEEL SHALL BE SPACED 9" UNLESS OTHERWISE NOTED

CONCRETE COLLAR NOTES

CONCRETE: BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOLDING OR FINISH WITH AN APPROVED EDGING TOOL. CONCRETE SHALL BE AS PER CITY OF WICHITA STANDARD SPECIFICATIONS FOR CONCRETE PAVING MIX EXCEPT THAT IT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 P.S.I. ALL PIPES SHALL BE FLUSH CUT PRIOR TO BEING CAST INTO THE HEADWALL.

REINFORCING STEEL: ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED. ALL CLEARANCES SHALL BE 2" UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. DESIGNATION A615 GRADE 60 AND SHALL BE EPOXY COATED.

PAYMENT: A DEDUCTION IN CONCRETE QUANTITIES HAS BEEN MADE FOR THE PIPE OPENINGS. THE "2– 42" HEADWALL/COLLAR (REINFORCED CONCRETE) OR "48" HEADWALL/COLLAR (REINFORCED CONCRETE)" SHALL BE PAID FOR AT THE UNIT PRICE BID PER EACH IN PLACE INCLUDING CONCRETE, REINFORCING STEEL, EXCAVATION AND ALL OTHER MISCELLANEOUS MATERIALS, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK. QUANTITIES SHOWN ARE FOR INFORMATION ONLY.

2–42" COLLAR/ 48" COLLAR DETAIL

No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
POND NOTES/COLLAR DETAILS
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. – CITY ENGINEER
C.O.W. Project # 468–83320 U.C.A. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
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Phone 316/683–4114 ■ FAX 316/683–4444

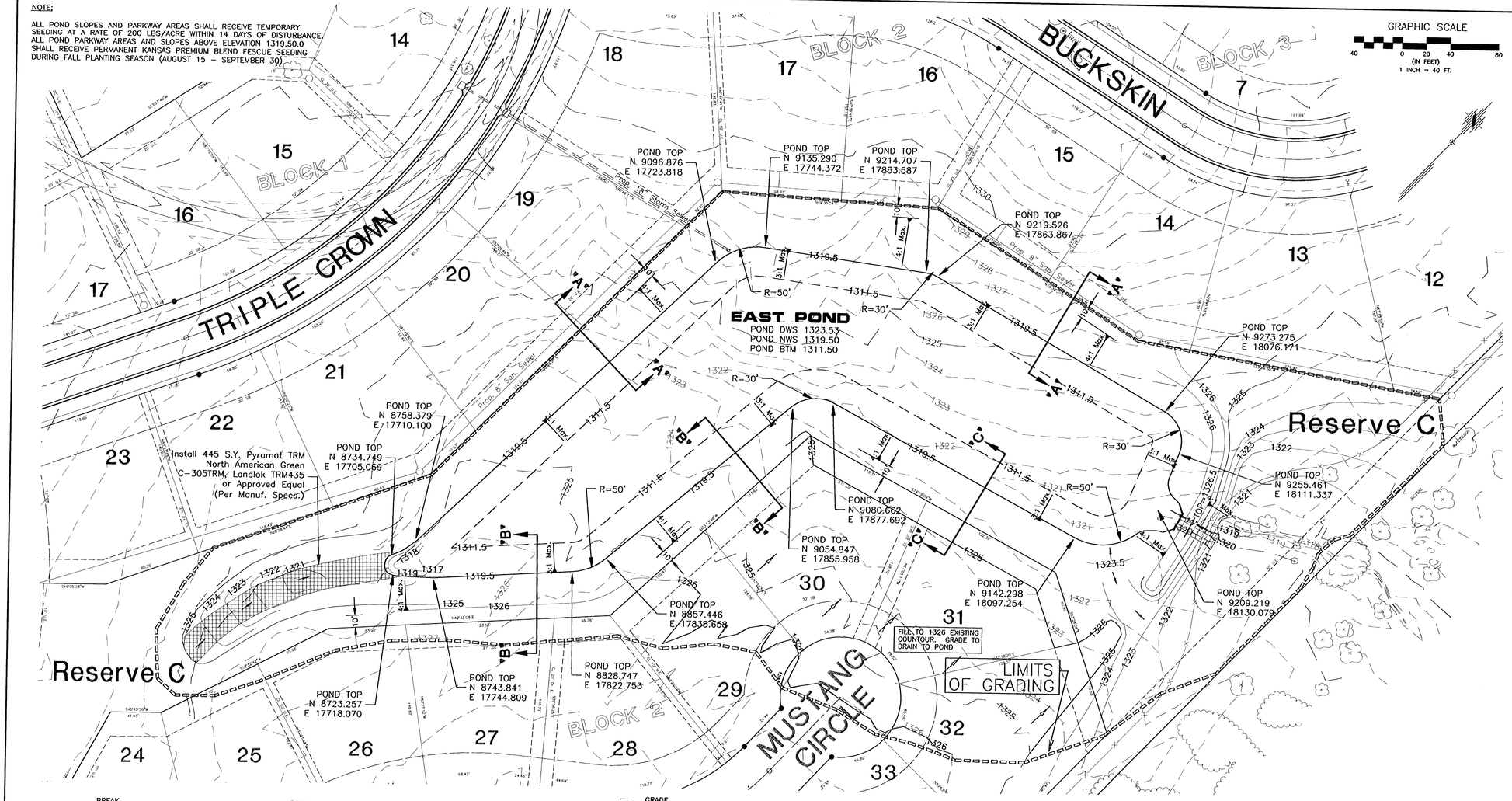
FINAL

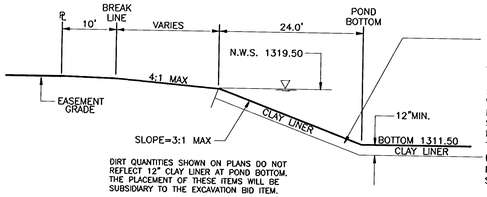
Designed By: J. Ubert / J. Dickmon
Drawn By: J. Dickmon
Poe Job No.: 1694A
Date: March 2002

Sheet 6 of 20

NOTE:

ALL POND SLOPES AND PARKWAY AREAS SHALL RECEIVE TEMPORARY SEEDING AT A RATE OF 200 LBS/ACRE WITHIN 14 DAYS OF DISTURBANCE. ALL POND PARKWAY AREAS AND SLOPES ABOVE ELEVATION 1319.50.0 SHALL RECEIVE PERMANENT KANSAS PREMIUM BLEND FESCUE SEEDING DURING FALL PLANTING SEASON (AUGUST 15 – SEPTEMBER 30)

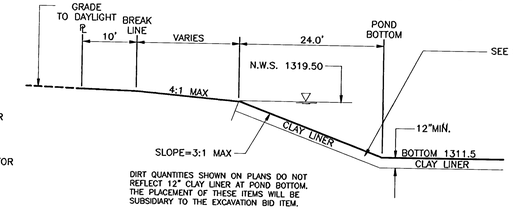




DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

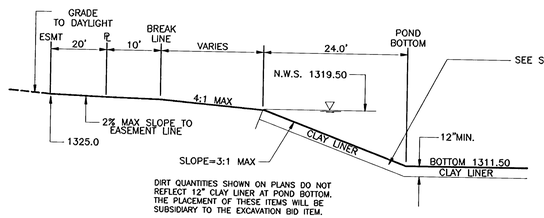
CONSTRUCT 12" MINIMUM THICKNESS CLAY LINER, COMPACT TO ABOVE OPTIMUM MOISTURE CONTENT A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698, STANDARD PROCTOR PROCEDURE. CLAY LINER TO BE CONSTRUCTED WITH SOILS HAVING A PLASTICITY INDEX OF 25. IF SUITABLE MATERIAL IS NOT ON SITE, CONTRACTOR SHALL FURNISH SUITABLE CLAY. PROCTOR AND COMPACTION TESTING SHALL BE BY TERRACON AT A COST NOT TO EXCEED $3,600. (COST OF CLAY LINER FROM ON SITE OR CONTRACTOR FURNISHED AND TERRACON TESTING SHALL BE SUBSIDIARY TO EXCAVATION).

SECTION "A" - "A"



DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

SECTION "B" - "B"



DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

SECTION "C" - "C"

No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
POND GRADING PLAN
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. – CITY ENGINEER
C.O.W. Project # 468-83320 O.C.K. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
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FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 7 of 20

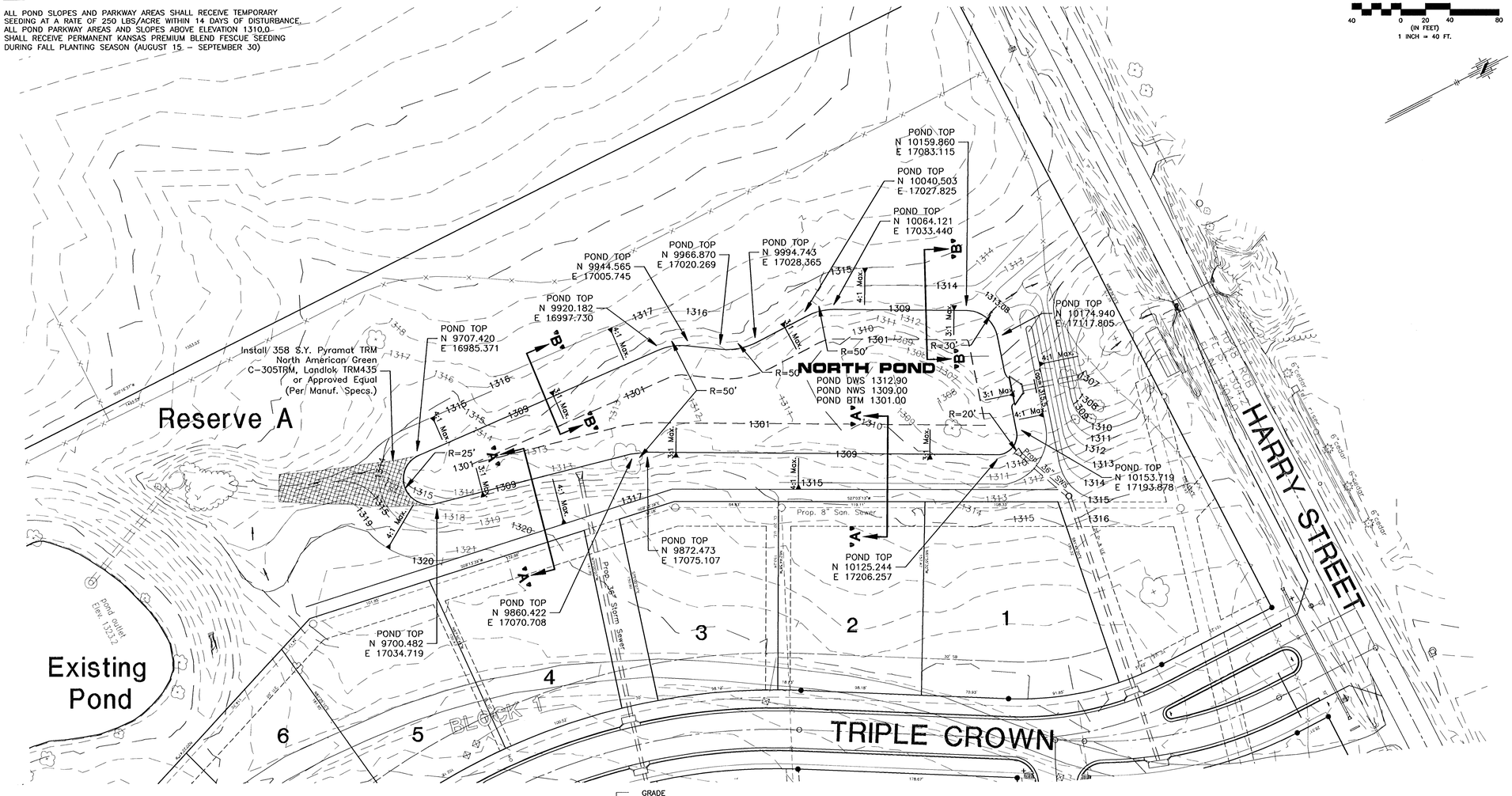
G:\APPS\ACA\PROJ\BASE-POND.dwg Thu Mar 28 15:57:33 2002 James Ubert - Poe & Associates of Kansas, Inc.

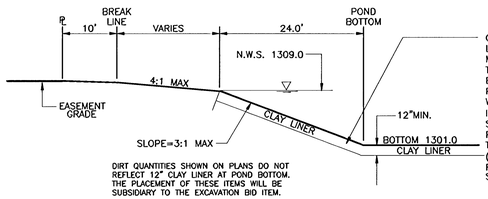
SHT-PROJ

NOTE:

ALL POND SLOPES AND PARKWAY AREAS SHALL RECEIVE TEMPORARY SEEDING AT A RATE OF 250 LBS/ACRE WITHIN 14 DAYS OF DISTURBANCE. ALL POND PARKWAY AREAS AND SLOPES ABOVE ELEVATION 1310.0 SHALL RECEIVE PERMANENT KANSAS PREMIUM BLEND FESCUE SEEDING DURING FALL PLANTING SEASON (AUGUST 15 – SEPTEMBER 30)

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

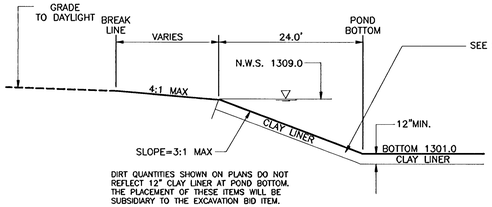




DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

CONSTRUCT 12" MINIMUM THICKNESS CLAY LINER, COMPACT TO ABOVE OPTIMUM MOISTURE CONTENT A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698, STANDARD PROCTOR PROCEDURE. CLAY LINER TO BE CONSTRUCTED WITH SOILS WITH A MINIMUM PLASTICITY INDEX OF 25. IF SUITABLE MATERIAL IS NOT ONSITE, CONTRACTOR SHALL FURNISH SUITABLE CLAY. PROCTOR & COMPACTION TESTING SHALL BE BY TERRACON AT A COST NOT TO EXCEED $3,600. (COST OF CLAY LINER FROM ON SITE OR CONTRACTOR FURNISHED AND TERRACON TESTING SHALL BE SUBSIDIARY TO EXCAVATION.)

SECTION "A" - "A"



DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

SECTION "B" - "B"

EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
POND GRADING PLAN
CITY OF WICHITA, KANSAS
MICHAEL E. LINEBAUGH, P.E. – CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

No.	Date	By	Approved	Revision
1				
2				
3				
4				

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

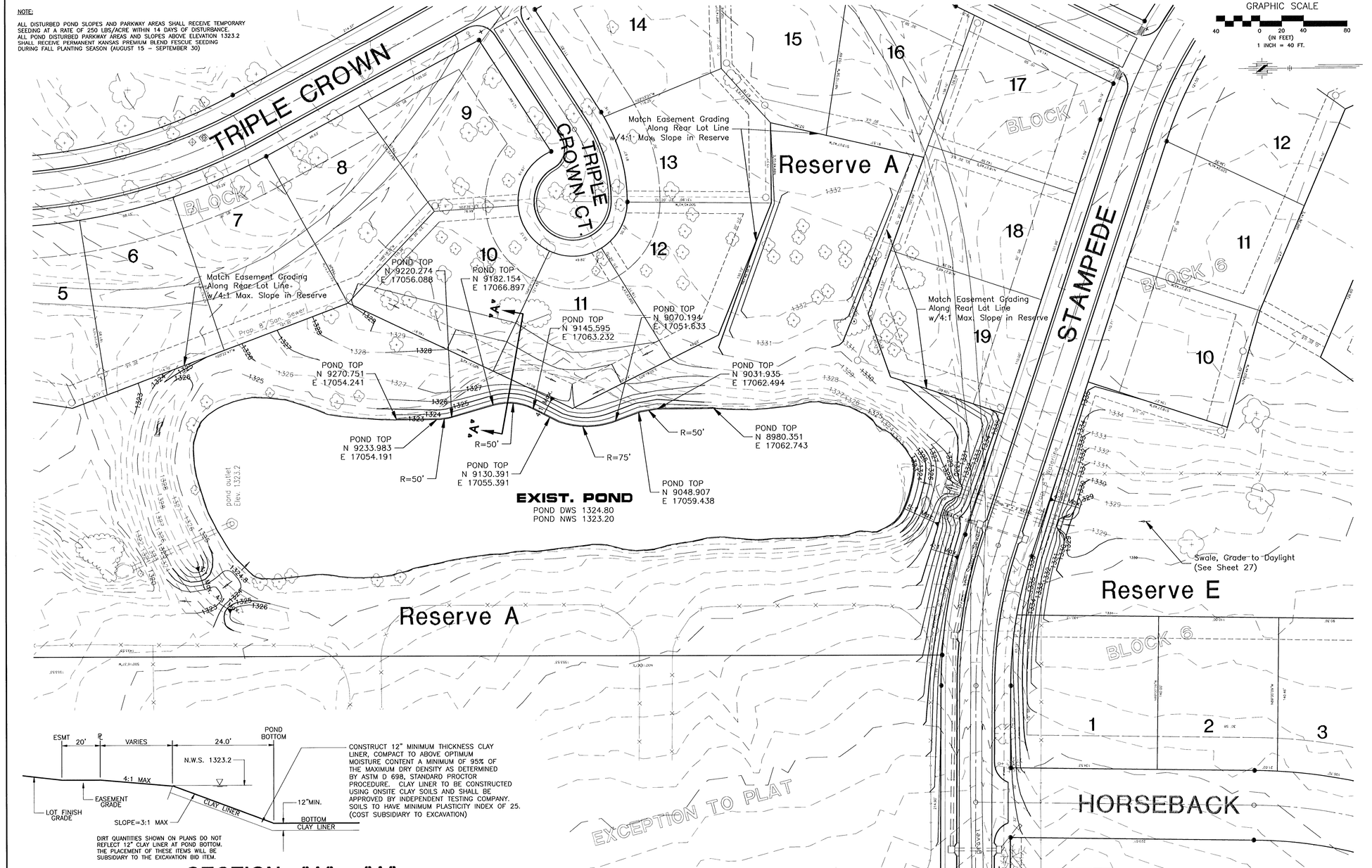
Sheet 8 of 20

G:\APPS\2CAD\PROJ\1694A\BASE-PND.dwg Thu Mar 28 15:06:34 2002 James Ubert - Poe & Associates of Kansas, Inc.

SHEET PLOTTED

NOTE:

ALL DISTURBED POND SLOPES AND PARKWAY AREAS SHALL RECEIVE TEMPORARY SEEDING AT A RATE OF 250 LBS/ACRE WITHIN 14 DAYS OF DISTURBANCE. ALL POND DISTURBED PARKWAY AREAS AND SLOPES ABOVE ELEVATION 1323.2 SHALL RECEIVE PERMANENT KANSAS PREMIUM BLEND FESCUE SEEDING DURING FALL PLANTING SEASON (AUGUST 15 – SEPTEMBER 30)



CONSTRUCT 12" MINIMUM THICKNESS CLAY LINER, COMPACT TO ABOVE OPTIMUM MOISTURE CONTENT A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698, STANDARD PROCTOR PROCEDURE. CLAY LINER TO BE CONSTRUCTED USING ONSITE CLAY SOILS AND SHALL BE APPROVED BY INDEPENDENT TESTING COMPANY. SOILS TO HAVE MINIMUM PLASTICITY INDEX OF 25. (COST SUBSIDIARY TO EXCAVATION)

DIRT QUANTITIES SHOWN ON PLANS DO NOT REFLECT 12" CLAY LINER AT POND BOTTOM. THE PLACEMENT OF THESE ITEMS WILL BE SUBSIDIARY TO THE EXCAVATION BID ITEM.

SECTION "A" - "A"

No.	Date	By	Approved	Revision
1				
2				
3				
4				

EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
POND/RESERVE GRADING PLAN
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. – CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 791305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
3940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 9 of 20

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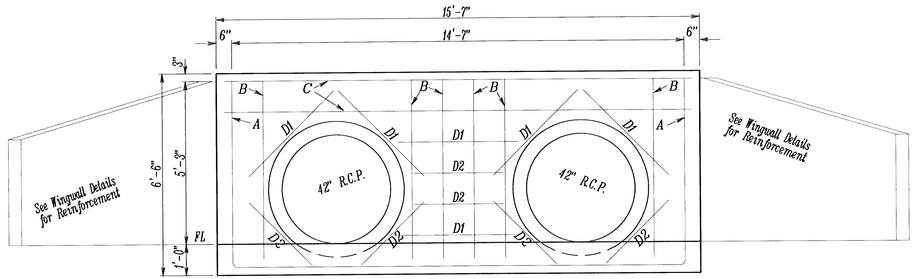

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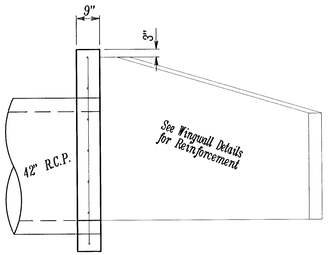
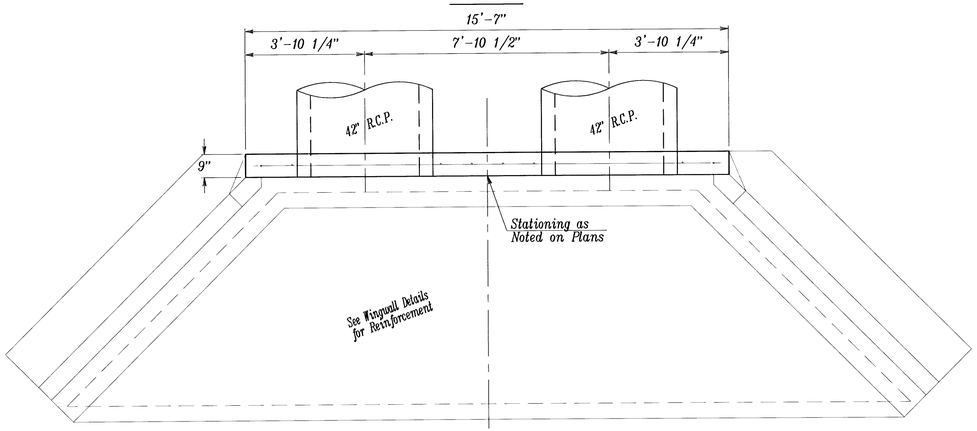


SECTION

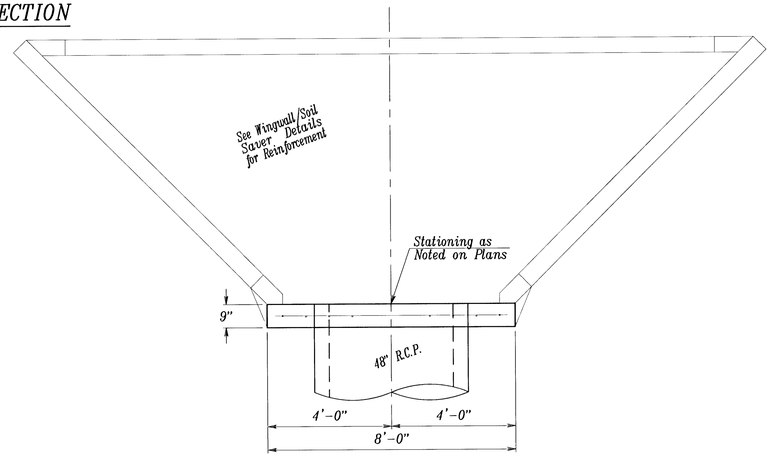
BENDING DIAGRAM

48" HEADWALL RE-BAR SCHEDULE				
Mark	Shape	No.	Length	Weight
J		1	21'-0"	14.45
K		2	6'-9"	14.19
L		3	7'-6"	15.48
M1		2	3'-8"	5.05
M2		4	2'-4"	6.42
N		6	1'-10"	7.57
Total Rebar				63 Lbs.
Concrete				2.01 C.Y.

All Concrete Reinforcement to be #4 bars.

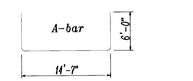


PLAN

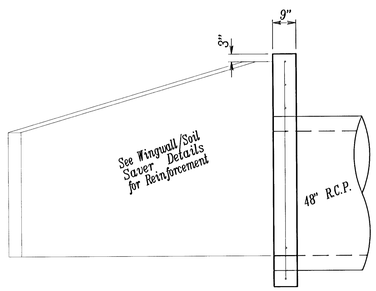


2-42" HEADWALL RE-BAR SCHEDULE				
Mark	Shape	No.	Length	Weight
A		1	26'-7"	18.29
B		6	5'-9"	23.74
C		2	15'-1"	20.75
D1		6	3'-8"	15.14
D2		6	2'-4"	9.63
Total Rebar				88 Lbs.
Concrete				1.98 C.Y.

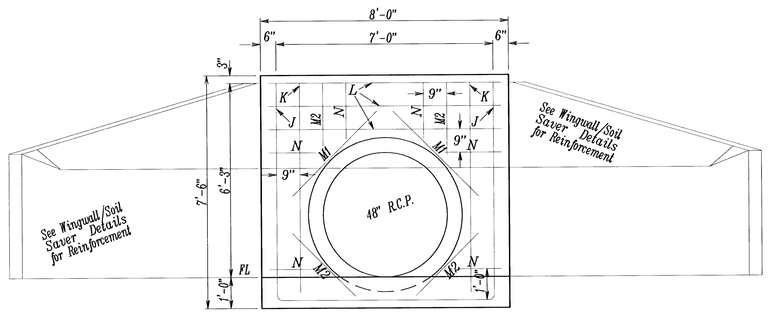
All Concrete Reinforcement to be #4 bars.



BENDING DIAGRAM



SECTION



FRONT

CONCRETE HEADWALL/COLLAR NOTES

CONCRETE: BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOLDING OR FINISH WITH AN APPROVED EDGING TOOL. CONCRETE SHALL BE AS PER CITY OF WICHITA STANDARD SPECIFICATIONS FOR CONCRETE PAVING MIX EXCEPT THAT IT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4.000 P.S.I. ALL PIPES SHALL BE FLUSH CUT PRIOR TO BEING CAST INTO THE HEADWALL.

REINFORCING STEEL: ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED. ALL CLEARANCES SHALL BE 2" UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. DESIGNATION A615 GRADE 60 AND SHALL BE EPOXY COATED. ALL HORIZONTAL AND VERTICAL REINFORCING STEEL SHALL BE SPACED 12" CENTER TO CENTER UNLESS OTHERWISE NOTED.

PAYMENT: A DEDUCTION IN CONCRETE QUANTITIES HAS BEEN MADE FOR THE PIPE OPENINGS. THE "2- 42" HEADWALL/COLLAR (REINFORCED CONCRETE) OR "48" HEADWALL/COLLAR (REINFORCED CONCRETE)" SHALL BE PAID FOR AT THE UNIT PRICE BID PER EACH IN PLACE INCLUDING CONCRETE, REINFORCING STEEL, EXCAVATION AND ALL OTHER MISCELLANEOUS MATERIALS, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK. QUANTITIES SHOWN ARE FOR INFORMATION ONLY.

2-42" HEADWALL/ 48" HEADWALL DETAIL

No.	Revision	Date	By	Approved
1				
2				
3				
4				

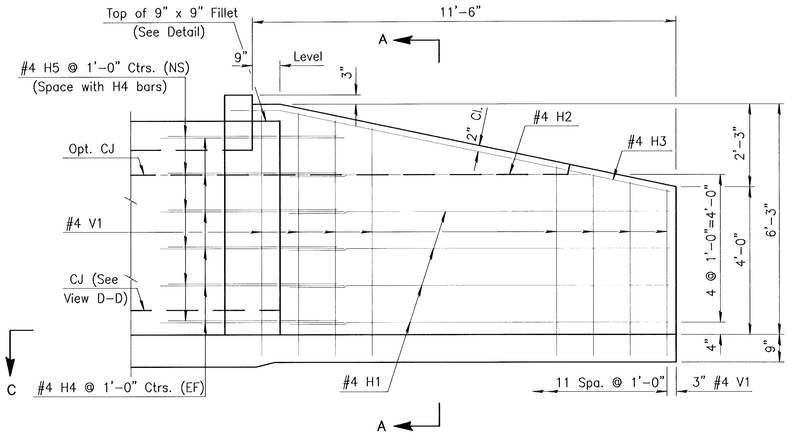
EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
HEADWALL DETAILS
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Project # 468-83320 O.C.K. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4174 ■ FAX 316/685-4444

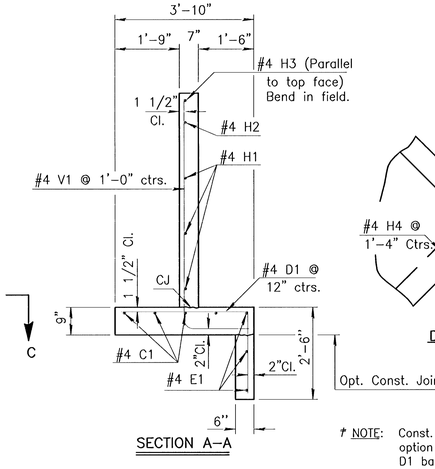
FINAL

Designed By: J. Ubert / J. Dickmon
Drawn By: J. Dickmon
Poe Job No.: 1694A
Date: March 2002

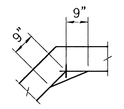
Sheet
10 of 20



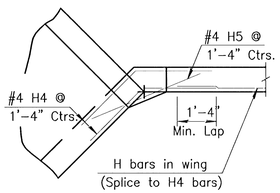
ELEVATION OF WINGWALL
(Backface Shown)



SECTION A-A



Fillet Detail



DETAIL OF 9" x 9" FILLET
(Plan View)

GENERAL NOTES

UNIT STRESSES: Class AAA Concrete; f'c = 4,000 p.s.i.
Reinforcing Steel; fy = 60,000 p.s.i.

CONCRETE: Class AAA Concrete shall be used throughout. Bevel all exposed edges with a 3/4 inch triangular moulding.

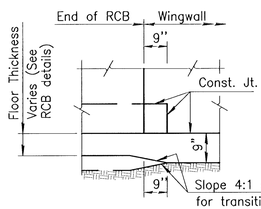
REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. Welded Wire Fabric shall conform to ASTM A185. All dimensions relative to reinforcing steel shall be to center-line of bar unless otherwise noted.

QUANTITIES: Wingwall Quantities include all quantities outside the neat lines of the box, excluding the hubguard.

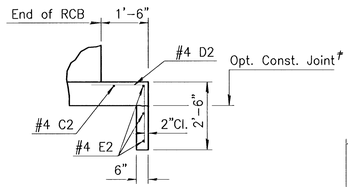
APRON: A 5" concrete slab shall be constructed between the downstream wings in locations subject to scour only when specified on the plans or by the Engineer. Wire Reinforcing mesh shall be electrically welded and shall be composed of 6 x 6-W1.4 x W1.4 welded wire fabric and shall be classified as pounds of reinforcing.

FOUNDATION AND BACKFILL MATERIAL: Soils judged as high plasticity clays, fat clays, expansive clays, or organic clays are unsuitable for foundation and/or backfill material for wingwalls and will not be used. Where these conditions exist, Foundation Stabiliation and/or Granular Backfill (Wingwalls) shall be used as determined by the Engineer.

† NOTE: Const. Jt. may be used at Contractor's option when approved by the Engineer. D1 bars or mesh may be spliced thus: ⌐¬ Minimum overlap shall be 1'-3". No increase in quantities or cost shall be allowed when Contractor elects this option.

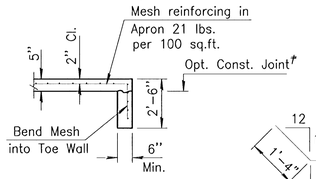


VIEW D-D

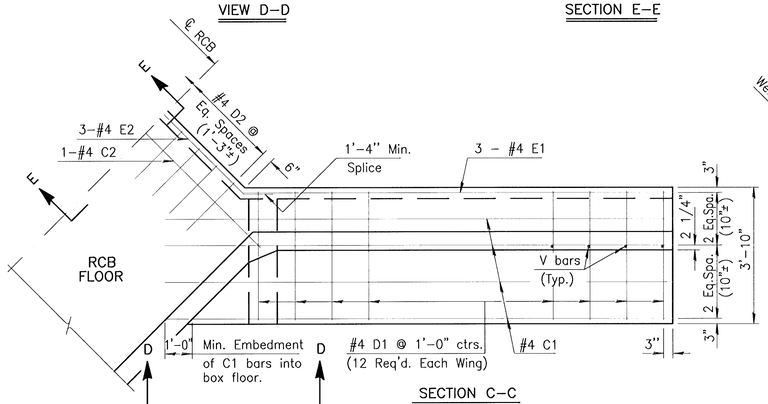


SECTION E-E

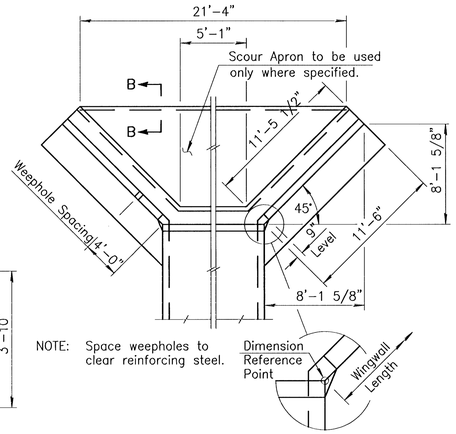
NOTE:
EF = Each Face
NS = Near Side
FS = Far Side
CJ = Const. Joint



SECTION B-B

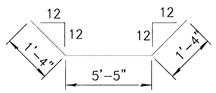


SECTION C-C
(Plan of Footing)

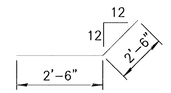


NOTE: Space weepholes to clear reinforcing steel.

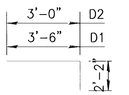
WING DIMENSIONS FOR NORMAL BOX
(3 1/2:1 Embankment Slope)



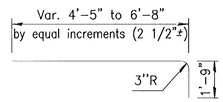
E2



H4



D1,D2



V1
(2 Req'd., each length)

BENDING DIAGRAM
(All dimensions are out to out of bars.)

NOTE: Reinforcing Bar List is for both wings at one end of box only.

* See Bending Diagram

		#4C1	#4D1	#4E1	#4C2	#4D2	#4E2	#4V1	#4H1	#4H2	#4H3	#4H4	#4H5
0° Skew	No.	8	24 *	6	1	4 *	3 *	24	8	2	2	24 *	12
	Length	14'-0"	5'-8"	11'-3"	7'-8"	5'-2"	8'-1"	*	10'-4"	8'-4"	12'-4"	5'-0"	3'-6"

WINGWALL QUANTITIES (One End Only)		
Class AAA Concrete:		
Wingwalls	6.50	CY.
Apron	2.48	CY.
Soil Saver	0.00	CY.
Reinforcing Steel	553.83	Lbs.
Welded Wire Fabric	33.68	Lbs.

NO.	DATE	REVISIONS	BY	APP'D
		~~KANSAS DEPARTMENT OF TRANSPORTATION~~		

North Pond

FLARED WINGWALLS
5 FT. RISE (0° SKEW)

~~BR10.00.05~~ SEDGWICK CO.

FHWA APPROVAL	6-5-91	APP'D	KENNETH F. HURST
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

FINAL

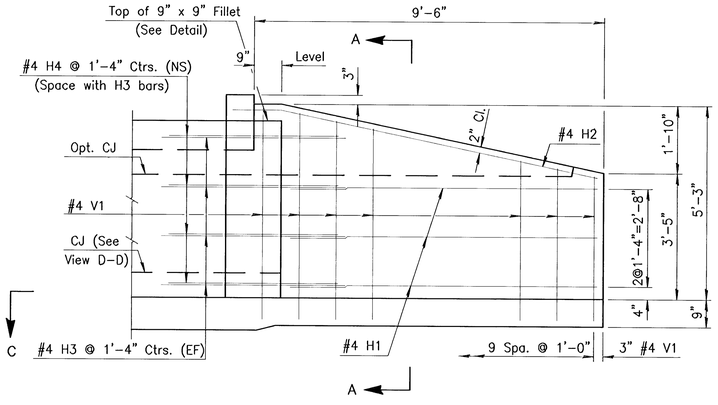
Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet
11 of 20

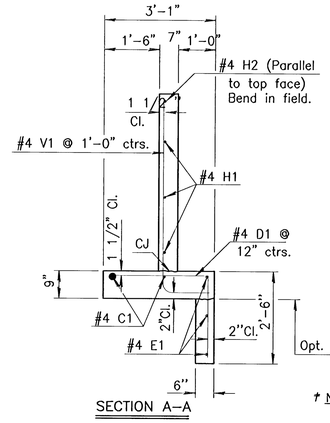
No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
WINGWALL (5' RISE) DETAILS
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

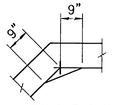
POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/688-4114 ■ FAX 316/685-4444



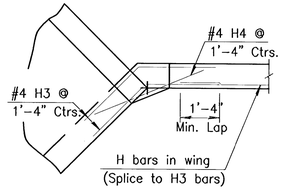
ELEVATION OF WINGWALL
(Backface Shown)



SECTION A-A



Fillet Detail



DETAIL OF 9" x 9" FILLET
(Plan View)

GENERAL NOTES

UNIT STRESSES: Class AAA Concrete; f'c = 4,000 p.s.i.
Reinforcing Steel; fy = 60,000 p.s.i.

CONCRETE: Class AAA Concrete shall be used throughout. Bevel all exposed edges with a 3/4 inch triangular moulding.

REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. Welded Wire Fabric shall conform to ASTM A185. All dimensions relative to reinforcing steel shall be to center-line of bar unless otherwise noted.

QUANTITIES: Wingwall Quantities include all quantities outside the neat lines of the box, excluding the hubguard.

~~APRON: A 5" concrete slab shall be constructed between the down-stream wings in locations subject to scour only when speci-fied on the plans or by the Engineer. Wire Reinforcing mesh shall be electrically welded and shall be composed of 6 x 6 - W1.4 x W1.4 welded wire fabric and shall be classified as pounds of reinforcing.~~

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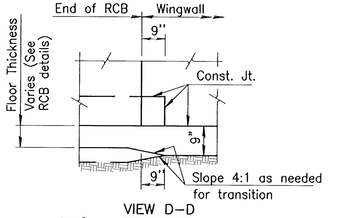
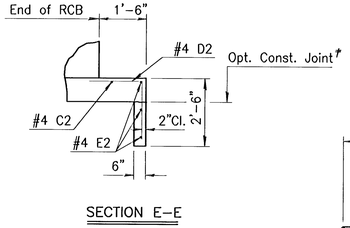


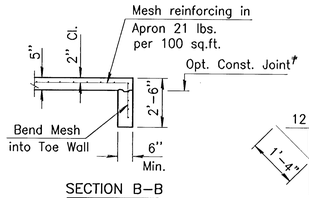
VIEW D-D



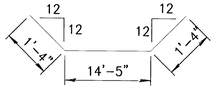
SECTION E-E

† NOTE: Const. Jt. may be used at Contractor's option when approved by the Engineer. D1 bars or mesh may be spliced thus: ⌒ Minimum overlap shall be 1'-3". No increase in quantities or cost shall be allowed when Contractor elects this option.

NOTE:
EF = Each Face
NS = Near Side
FS = Far Side
CJ = Const. Joint



SECTION B-B



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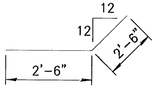

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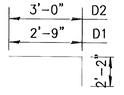
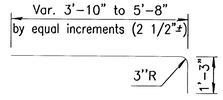
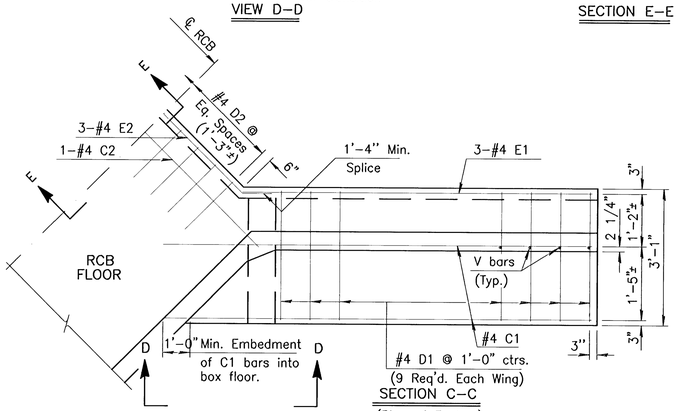


D1,D2

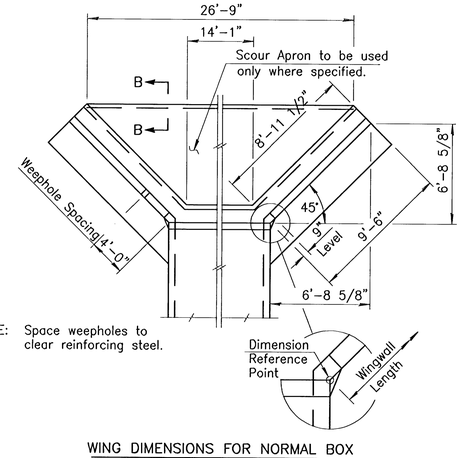


V1
(2 Req'd., each length)

BENDING DIAGRAM
(All dimensions are out to out of bars.)



SECTION C-C
(Plan of Footing)



NOTE: Space weepholes to clear reinforcing steel.

WING DIMENSIONS FOR NORMAL BOX
(3 1/2:1 Embankment Slope)

WINGWALL QUANTITIES (One End Only)		
Class AAA Concrete:		
Wingwalls	5.26	CY.
Apron	0.00	CY.
Soil Saver	0.00	CY.
Reinforcing Steel	406.92	Lbs.
Welded Wire Fabric	00.00	Lbs.

NOTE: Reinforcing Bar List is for both wings at one end of box only.

✱ See Bending Diagram

		#4C1	#4D1	#4E1	#4C2	#4D2	#4E2	#4V1	#4H1	#4H2	#4H3	#4H4
0° Skew	No.	4	18 ✱	6	1	11 ✱	3 ✱	20	6	2	16 ✱	8
	Length	11'-7"	4'-11"	8'-9"	15'-1"	5'-2"	17'-1"	✱	8'-4"	10'-3"	5'-0"	3'-6"

NO.	DATE	REVISIONS	BY	APP'D
		~~KANSAS DEPARTMENT OF TRANSPORTATION~~		

East Pond

FLARED WINGWALLS
4 FT. RISE (0° SKEW)

~~BR10.00.04~~ SEDGWICK CO.

FHWA APPROVAL	6-5-91	APP'D	KENNETH F. HURST
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet
12 of 20

No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
WINGWALL (4' RISE) DETAILS
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Project # 466-83320 C.O.W. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone: 316/685-4114 ■ FAX: 316/685-4444

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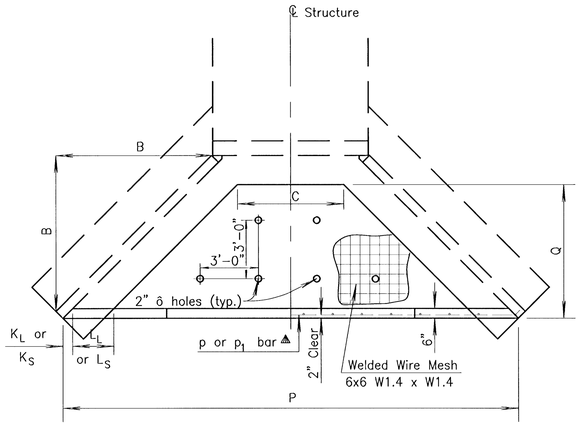
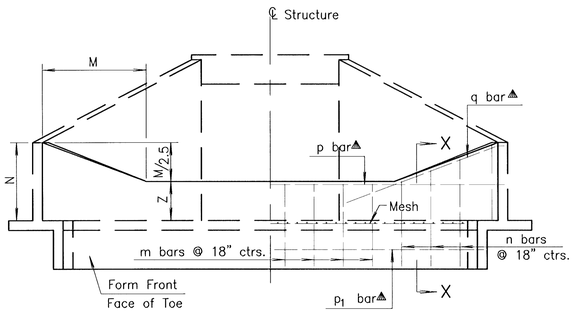
Jan www



PLAN



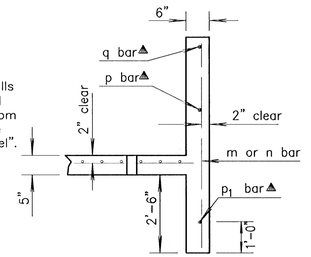
ELEVATION AND SECTION

GENERAL NOTE

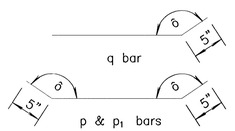
CONCRETE: Class AAA Concrete shall be used throughout. All exposed edges shall be finished with an edging tool.

REINFORCING: All dimensions are to ℄ of bar except where noted. All reinforcing bars are No. 4. Reinforcing bars shall be Grade 60 billet steel. Minimum clearance on all reinforcement shall be 2". Weight of welded wire mesh is 21 lbs. per 100 sq. ft. Mesh shall be paid as pounds of reinforcing steel. When holes in the apron are warranted by drainage conditions they shall be constructed as directed by the Engineer.

▲ Drill and grout p and q bars into wingwalls and p_1 bar into wing footings when the soil saver end wall is constructed separately from the wingwalls. Drilling and grouting shall be Subsidiary to the bid item "Reinforcing Steel".



SECTION X–X



ô Angle varies according to skew of RCB. Bars shall be field bent.

BENDING DIAGRAMS

STATION				SIDE					Skew		Z= 3'-6'	
Letter	B	C	K_L	K_S	L_L	L_S	M	N	P	P_L	P_S	Q
Dimension								4'-0"				
Bar	m	n*	p	p_1	q		Sq. Ft. Mesh					
Number							Class "AAA" Conc.					Cu.Yd.
Length							Reinf. steel					Lbs.

STATION				SIDE					Skew		Z=	
Letter	B	C	K_L	K_S	L_L	L_S	M	N	P	P_L	P_S	Q
Dimension												
Bar	m	n*	p	p_1	q		Sq. Ft. Mesh					
Number							Class "AAA" Conc.					Cu.Yd.
Length							Reinf. steel					Lbs.

STATION				SIDE					Skew		Z=	
Letter	B	C	K_L	K_S	L_L	L_S	M	N	P	P_L	P_S	Q
Dimension												
Bar	m	n*	p	p_1	q		Sq. Ft. Mesh					
Number							Class "AAA" Conc.					Cu.Yd.
Length							Reinf. steel					Lbs.

STATION				SIDE					Skew		Z=	
Letter	B	C	K_L	K_S	L_L	L_S	M	N	P	P_L	P_S	Q
Dimension												
Bar	m	n*	p	p_1	q		Sq. Ft. Mesh					
Number							Class "AAA" Conc.					Cu.Yd.
Length							Reinf. steel					Lbs.

STATION				SIDE					Skew		Z=	
Letter	B	C	K_L	K_S	L_L	L_S	M	N	P	P_L	P_S	Q
Dimension												
Bar	m	n*	p	p_1	q		Sq. Ft. Mesh					
Number							Class "AAA" Conc.					Cu.Yd.
Length							Reinf. steel					Lbs.

Quantities include apron and soil saver end wall.

*n bars are variable, increase by increments of 7". Cut 2 each length.

SUMMARY OF SOIL SAVERS

Station	Culvert Size	Side	Z	Skew

NO.	DATE	REVISIONS	BY	APP'D
2				
1	08-01-00	Revised Drill & Grout Note	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SOIL SAVER FOR R.C. CULVERTS

RD520

FHWA APPROVAL	8-23-00	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Seitz

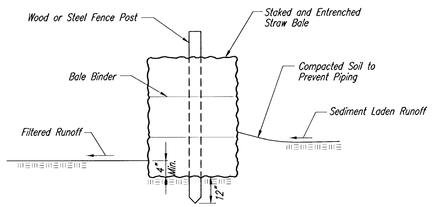
EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
POND CONTROL STRUCTURE
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. – CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 13 of 20



STRAW BALE BARRIERS

Material Specification:

Bale slope barriers may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture.
The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.
When practicable, bale slope barriers should be placed along contours to avoid a concentration of flow.
Bale slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 4" deep and a bale's width wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.
Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground.
Once all the bales have been installed and anchored, place the excavated soil against the upslope side of the check and compact it. The compacted soil should be no more than 3" to 4" deep.

List of common placement/installation mistakes to avoid:

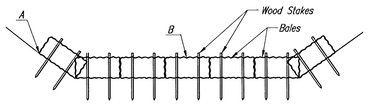
When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the barrier fails.
Do not place bale slope barriers in areas with shallow soils underlain by rock. If the barrier is not anchored sufficiently, it will wash out.
Bale slope barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:

Bale slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

Are there any points along the slope barrier where water is concentrating?
Does water flow under the slope barrier?
Does water flow through spaces between abutting bales?
Are any bales dislodged?
Are bales decomposing due to age and/or water damage?
Does sediment need to be removed from behind the slope barrier?

NOTE: Point A must be higher than Point B so that water flows over the bales and not around them.



STRAW BALE DITCH CHECKS

Material Specification:

Bale ditch checks may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture.
The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.
Optional: The downstream scour apron should be constructed of a double-netted straw erosion-control blanket at least 6' wide.
Optional: The metal landscape staples used to anchor the erosion-control blanket should be at least 8" long.

Placement:

Bale ditch checks should be placed perpendicular to the flowline of the ditch.
The ditch check should extend far enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. This prevents water from flowing around the check.
Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead.
Bales should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used.
The following table provides check spacing for a given ditch grade:

Ditch grade (%)	Check Spacing (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

Proper installation method:

Excavate a trench perpendicular to the ditch flowline that is 4" deep and a bale's width wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench-it will be used later.
Optional: On the downstream side of the trench, roll out a length of erosion-control blanket (scour apron) equal to the length of the trench. Place the upstream edge of the erosion-control blanket along the bottom upstream edge of the trench. The erosion control blanket should be anchored in the trench with one row of 8" landscape staples placed on 18" centers. The remainder of the erosion-control blanket (the portion that is not lying in the trench) will serve as the downstream scour apron. This section of the blanket should be anchored to the ground with 8" landscape staples placed around the perimeter of the blanket on 18" centers. The remainder of the blanket should be anchored using two evenly spaced rows of 8" landscape staples on 18" centers placed perpendicular to the flowline of the ditch.
Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground.
Once all the bales have been installed and anchored, place the excavated soil against the upstream side of the check and compact it. The compacted soil should be no more than 3" to 4" deep and extend upstream no more than 24".

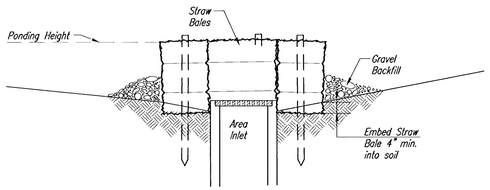
List of common placement/installation mistakes to avoid:

Do not place a bale ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow.
Do not place bale ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow.
Follow prescribed ditch-check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks.
Do not let water around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the check is higher than the top of the lowest center bale.
Do not place bale ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.
Bale ditch checks must be dug into the ground. Bales at ground level do not work because they allow water to flow under the check.

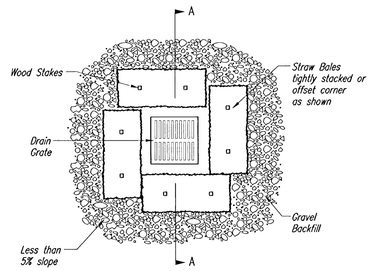
Inspection and Maintenance:

Bale ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

Does water flow around the ditch check?
Does water flow under the ditch check?
Does water flow through spaces between abutting bales?
Are any bales and/or scour aprons (optional) dislodged?
Are bales decomposing due to age and/or water damage?
Does sediment need to be removed from behind the ditch check?



SECTION A-A



STRAW BALE BARRIERS FOR AREA INLETS
(INLET PROTECTION)

Material Specification:

Bale area inlet barriers should be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture.
The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

Bale area inlet barriers should be placed directly around the perimeter of a drop inlet.
When a bale area inlet barrier is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

Proper Installation Method:

Excavate a trench around the perimeter of the area inlet that is at least 4" deep by a bale's width wide.
Place the bales in the trench, making sure that they are butted tightly. Some bales may need to be shortened to fit into the trench around the area inlet. Two stakes should be driven through each bale, approximately 6" to 8" in from the bale ends.
Stakes should be driven at least 12" into the ground.
Once all the bales have been installed and anchored, place the excavated soil against the receiving side of the barrier and compact it. The compacted soil should be no more than 3" to 4" deep.
Note: When a bale area inlet barrier is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

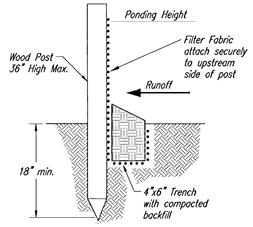
List of common placement installation mistakes to avoid:

Bales should be placed directly against the perimeter of the area inlet. This allows overtopping water to flow directly into the inlet instead of onto nearby soil causing scour.
Bale area inlet barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:

Bale area inlet barriers should be inspected every 7 days and within 24 hours of a rainfall 1/2" or more. The following is a list of questions that should be addressed during each inspection:

Does water flow under the area inlet barrier?
Does water flow through spaces between abutting bales?
Are any bales dislodged?
Are bales decomposing due to age and/or water damage?
Does sediment need to be removed from behind the area inlet barrier?



SILT FENCE BARRIERS

SILT FENCE BARRIERS

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification.
The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.
Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.
When practicable, silt fence slope barriers should be placed along contours to avoid a concentration of flow.
Silt fence slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 6" deep by 4" wide.
Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.
Roll out a continuous length of silt fence fabric on the downslope side of the trench.
Place the edge of the fabric in the trench starting at the top upslope edge. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt-fence fabric should remain exposed.
Lay the exposed silt fence upslope of the trench to clear an area for driving in the posts.
Just downslope of the trench, drive posts into the ground to a depth of at least 18".
Place posts no more than 4' apart.
Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

List of common placement/installation mistakes to avoid:

When practicable, do not place silt fence slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. When the flow concentrates, it overtops the barrier and the silt fence slope barrier quickly deteriorates.
Do not place silt-fence posts on the upslope side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail.
Do not place silt fence slope barriers in areas with shallow soils underlain by rock. If the barrier is not sufficiently anchored, it will wash out.
Silt fence slope barriers must be dug into the ground-silt fence at ground level does not work because water will flow underneath.

Inspection and Maintenance:

Silt fence slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

Are there any points along the slope barrier where water is concentrating?
Does water flow under the slope barrier?
Do the silt fences sag excessively?
Has the silt fence torn or become detached from the posts?
Does sediment need to be removed from behind the slope barrier?

CITY OF WICHITA

SOIL EROSION BMP DETAILS

CHRISTOPHER M. CARRIER, P.E.
STORM WATER ENGINEER

PROJECT NUMBER	OCA NO.
468-83320	751305

DATE: MAY 2001

SHEET 14 OF 20

No.	Date	By	Approved	Revision
1				
2				
3				
4				

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
SOIL EROSION BMPS

CITY OF WICHITA, KANSAS
MICHAEL E. LUNDEAN, P.E. CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
3940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe - Job No.: 1694A
Date: March 2002

Sheet 14 of 20

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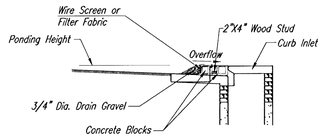
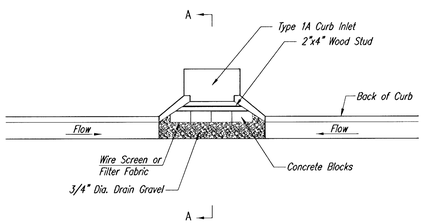


SECTION A-A



CURB INLET GRAVEL FILTERS
(INLET PROTECTION-RESIDENTIAL STREETS ONLY)

NOTE: Other types of curb inlet protection may be approved by the city so long as equal protection is provided.

A gravel inlet filter shall be installed at sump locations on residential streets. This type of protection is not to be used on arterial or collector streets at any time that it would pose an undue traffic hazard.

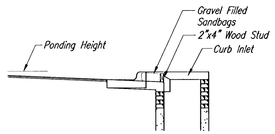
Instructions for Installing:

STEP 1: Place concrete blocks around the inlet as shown on drawing. Insert 2x4 board as shown.
STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary. An alternative installation is the use of gravel bags supported by a 2"x4" board to prevent collapsing.

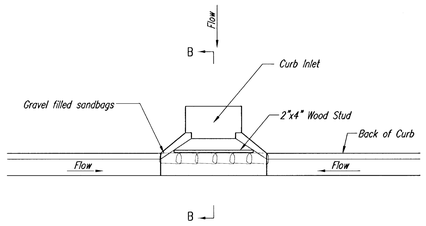
Use of rock with diameters smaller than 1" in the bag may result in clogging of pores and reduce the amount of water flowing into an inlet.

Maintenance:

All curb inlet gravel filters shall be inspected and repaired after each runoff event. Sediment deposits are to be removed once material is within 8 cm (3 inches) of the top of any block. Periodically, the gravel shall be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roods and streets.

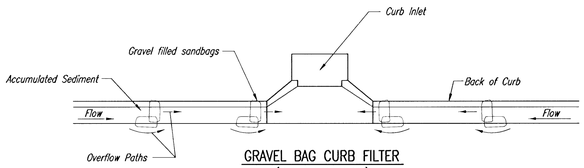


SECTION B-B



CURB INLET SANDBAG FILTERS
(INLET PROTECTION)

NOTE: Other types of curb inlet protection may be approved by the City so long as equal protection is provided.



GRAVEL BAG CURB FILTER
(INLET PROTECTION)

NOTE: Place two or more sets of bags in a manner that results in maximum support. The flow line bag must be lower than top of curb.

CURB SEDIMENT TRAPS

When inlets are located on streets having a grade (i.e., sump conditions do not exist), installing gravel (or sand) bags in the gutter flow line to create small sediment traps can be considered. Gravel bags are recommended over sand bags to allow for drainage.

If the spacing between bags becomes too large, little sediment may be trapped. Spacing of bags should be completed using the table or graph that illustrates placement distances based upon street slope. When installed in the gutter, bag tops must be lower than the sidewalk.

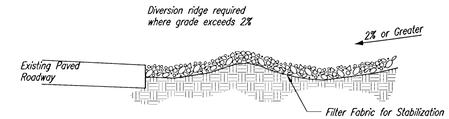
Spacing:

Gravel bags are to be placed according to street grades using the following table or graph that appears below.

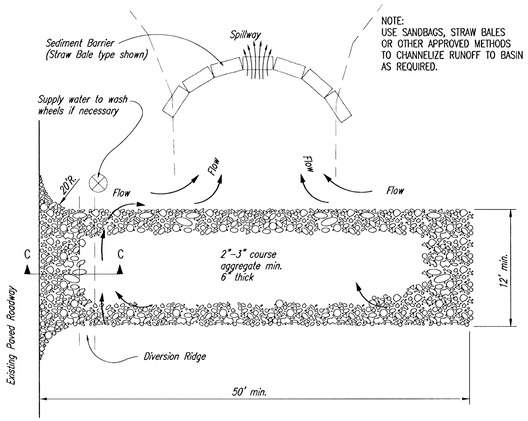
GRADE (%)	SPACING (FEET)
0.5	75
1.0	45
2.0	18
3.0	12
4.0	9
5.0	6

Maintenance:

Collected sediment shall be removed after every runoff event. Bags that are destroyed by vehicular traffic or through natural deterioration are to be immediately replaced.



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
4. DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.

CITY OF WICHITA

SOIL EROSION BMP DETAILS

CHRISTOPHER M. CARRIER, P.E.
STORM WATER ENGINEER

PROJECT NUMBER	OCA NO.
468-83320	751305

DATE: MAY 2001

SHEET 15 OF 20

No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
SOIL EROSION BMPS

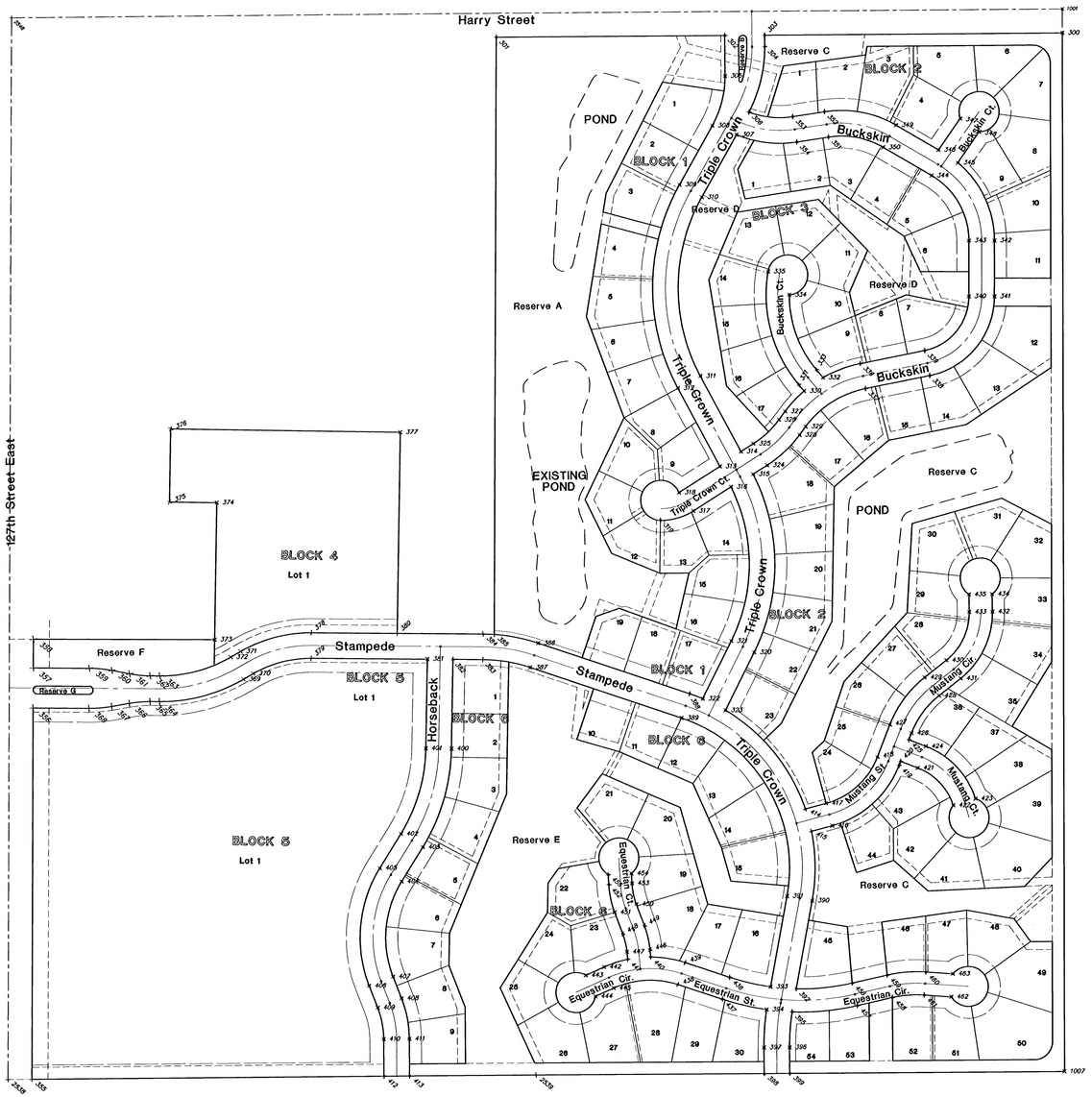
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
9940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickmon
Drawn By: J. Dickmon
Poe Job No.: 1694A
Date: March 2002

Sheet
15 of 20



Scale 1" = 150'

COORDINATE POINTS LIST		
POINT #	NORTHING	EASTING
9,238	7,325.418	16,815.258
9,239	7,575.404	16,580.263
1,207	7,579.343	16,581.344
1,201	10,356.356	16,526.974
9,240	10,317.979	16,552.229
302	10,370.035	16,526.819
301	10,582.309	16,543.266
302	10,370.358	17,414.253
303	10,370.815	17,414.252
304	10,541.462	17,415.119
305	10,158.306	17,415.259
306	10,076.468	17,475.819
307	10,025.068	17,444.138
308	10,046.815	17,365.308
309	9,897.409	17,305.081
310	9,958.306	17,365.206
311	9,418.825	17,365.799
312	9,306.648	17,396.284
313	9,125.043	17,451.418
314	9,332.987	17,464.158
315	9,119.368	17,464.268
316	9,141.811	17,438.787
317	9,081.468	17,394.438
318	9,157.208	17,358.799
319	9,267.209	17,328.197
320	9,157.209	17,466.813
321	9,758.064	17,439.258
322	9,811.268	17,267.468
323	9,825.815	17,414.668
324	9,156.979	17,818.774
325	9,148.267	17,466.464
326	9,308.061	17,325.809
327	9,267.625	17,706.685
328	9,418.818	17,325.825
329	9,485.809	17,814.399
330	9,817.809	18,256.648
331	9,817.809	18,209.648
332	9,787.048	18,209.328
333	9,787.156	18,256.328
334	9,818.048	17,325.975
335	9,861.715	17,267.256
336	9,825.779	17,349.806
337	10,025.644	18,004.499
338	10,258.815	18,261.208
339	10,246.749	17,943.581
340	9,995.438	17,811.008
341	10,215.525	17,574.581
342	10,219.257	17,356.879
343	10,267.215	17,206.152
344	10,204.038	17,264.253
345	9,925.729	16,878.208
346	9,861.548	16,905.408
347	9,861.548	16,951.271
348	10,258.815	16,951.208
349	10,246.749	17,943.581
350	9,995.438	17,811.008
351	10,215.525	17,574.581
352	10,219.257	17,356.879
353	10,267.215	17,206.152
354	10,204.038	17,264.253
355	9,925.729	16,878.208
356	9,861.548	16,905.408
357	9,861.548	16,951.271
358	10,258.815	16,951.208
359	10,246.749	17,943.581
360	9,995.438	17,811.008
361	10,215.525	17,574.581
362	10,219.257	17,356.879
363	10,267.215	17,206.152
364	10,204.038	17,264.253
365	9,925.729	16,878.208
366	9,861.548	16,905.408
367	9,861.548	16,951.271
368	9,755.553	16,951.219
369	9,905.438	16,951.378
370	9,904.769	16,878.209
371	9,978.524	16,953.197
372	9,971.108	16,979.746
373	9,978.209	16,997.261
374	9,908.928	16,997.258
375	9,997.111	16,978.191
376	9,905.267	16,951.623
377	9,906.117	16,977.324
378	9,905.425	16,995.419
379	9,951.266	16,997.258
380	9,978.117	16,951.264
381	9,191.814	16,909.108
382	9,717.468	16,178.468
383	9,781.558	16,156.259
384	9,158.267	16,141.178
385	9,156.008	16,953.152
386	9,958.267	16,958.264
387	9,978.028	16,951.008
388	9,778.028	16,977.813
389	9,174.024	16,978.808

COORDINATE POINTS LIST		
POINT #	NORTHING	EASTING
390	9,778.021	16,925.424
391	9,711.521	16,927.718
392	9,715.269	16,781.714
393	9,709.524	16,808.794
394	9,778.021	16,927.974
395	9,778.764	16,958.329
396	9,705.814	16,958.468
397	9,806.159	16,958.174
398	9,854.329	17,254.643
399	9,858.528	17,304.319
400	9,106.178	17,290.987
401	9,117.728	17,927.714
402	7,908.564	17,930.289
403	7,921.519	17,938.184
404	7,888.048	17,915.181
405	7,858.326	17,920.006
406	7,798.028	17,915.419
407	7,798.197	17,908.419
408	7,818.258	17,908.708
409	7,874.189	17,913.787
410	8,027.174	18,157.258
411	8,068.308	18,258.809
412	8,174.429	18,261.148
413	8,268.874	18,266.809
414	8,105.174	18,268.713
415	8,105.799	18,048.381
416	7,964.468	18,051.126
417	7,917.901	18,050.268
418	7,868.208	18,048.028
419	7,808.728	18,048.268
420	7,798.026	18,047.268
421	7,781.328	18,051.268
422	7,808.148	18,047.154
423	7,808.327	18,051.178
424	8,268.268	17,814.817
425	8,278.819	17,828.819
426	8,268.221	17,881.126
427	8,248.228	17,955.154
428	8,036.468	17,764.721
429	8,464.879	17,848.208
430	8,464.474	17,868.281
431	8,487.268	17,868.219
432	8,464.419	17,864.267
433	8,268.264	18,268.219
434	8,468.271	17,815.329
435	8,268.879	17,872.257
436	8,258.268	17,920.029
437	8,248.268	17,956.204
438	8,218.127	17,968.148
439	8,204.248	17,815.198
440	8,707.268	17,697.428
441	8,281.267	18,028.208
442	8,258.281	18,028.799
443	8,258.147	18,054.798
444	8,278.268	18,028.148
445	8,278.328	18,054.168
446	7,814.268	17,958.208
447	7,808.879	17,908.208
448	7,808.268	17,928.818
449	7,781.258	17,915.817
450	7,808.178	17,955.324
451	7,808.248	17,138.811
452	7,248.819	17,109.381
453	7,258.171	17,068.198
454	7,267.248	17,067.209
455	7,267.267	17,138.204
456	7,264.247	17,154.406
457	7,218.268	17,138.208
458	8,258.258	17,138.208
459	8,248.711	17,218.206
460	8,267.781	17,198.251
461	8,277.268	17,138.219
462	8,168.481	17,181.468
463	8,148.178	17,179.217
464	8,174.418	17,177.281
465	8,177.181	17,138.208
466	7,808.238	17,138.206
467	7,848.781	17,148.849
468	7,888.172	17,221.146
469	7,858.207	17,218.191
470	7,857.207	17,214.748
471	7,838.268	17,210.208
472	7,808.128	17,218.238
473	7,858.287	17,228.207

No.	Date	By	Approved	Revision

EQUESTRIAN ESTATES – PHASE 1
DRAINAGE IMPROVEMENTS
COORDINATE POINTS LIST
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. – CITY ENGINEER
C.O.W. Project # 466-83320 O.C.K. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
9940 E. Central, Suite 200 ■ Wichita, KS 67206-4242
Phone 316/685-4711 ■ FAX 316/685-4444

FINAL
Designed By: J. Ubert / J. Dickmon
Drawn By: J. Dickmon
Poe Job No.: 1634A
Date: March 2002

Sheet
16 of 20

G:\APPS\DCAD\PGN\Plot grading1.dwg Thu Mar 14 08:06:18 2002 Bernard Nulla - POE & ASSOCIATES OF KANSAS INC.

Set1.SCP

G:\APPS\DCA\PW64A\1ot_grading1.dwg Tue Mar 26 11:31:30 2002 Jason Dickman, Poe & Associates of Kansas, Inc.

LEGEND

20.9 = Proposed Elevation at Lot Corner

X 3300 = Coordinate Point for Waste Areas

= Direction of Flow

= Waste area (To Elevations Shown)

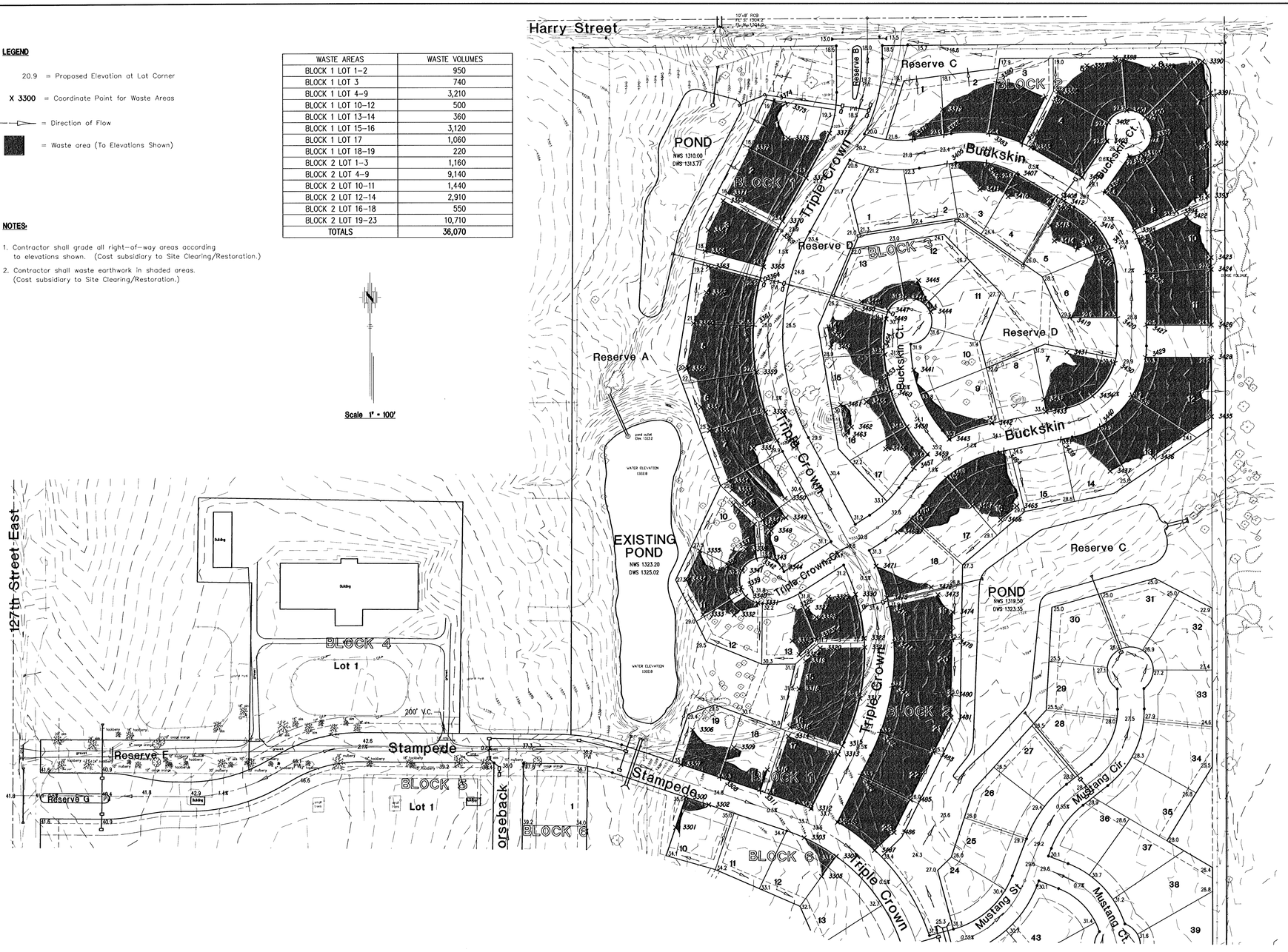
WASTE AREAS	WASTE VOLUMES
BLOCK 1 LOT 1-2	950
BLOCK 1 LOT 3	740
BLOCK 1 LOT 4-9	3,210
BLOCK 1 LOT 10-12	500
BLOCK 1 LOT 13-14	360
BLOCK 1 LOT 15-16	3,120
BLOCK 1 LOT 17	1,060
BLOCK 1 LOT 18-19	220
BLOCK 2 LOT 1-3	1,160
BLOCK 2 LOT 4-9	9,140
BLOCK 2 LOT 10-11	1,440
BLOCK 2 LOT 12-14	2,910
BLOCK 2 LOT 16-18	550
BLOCK 2 LOT 19-23	10,710
TOTALS	36,070

NOTES:

1. Contractor shall grade all right-of-way areas according to elevations shown. (Cost subsidiary to Site Clearing/Restoration.)
2. Contractor shall waste earthwork in shaded areas. (Cost subsidiary to Site Clearing/Restoration.)

N

Scale 1" = 100'



NO.	DATE	BY	APPROVED	REVISION
1				
2				
3				
4				

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
LOT GRADING PLAN
CITY OF WICHITA, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
C.O.W. Project # 468-83320 O.C.A. # 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 17 of 20

SHT P-1 1050

LEGEND

= Direction of Flow

= Temporary Seeding Area (200 lbs/acre Rye Grass)

= Permanent Seeding Area (250 lbs/acre KS Premium Blend Fescue)

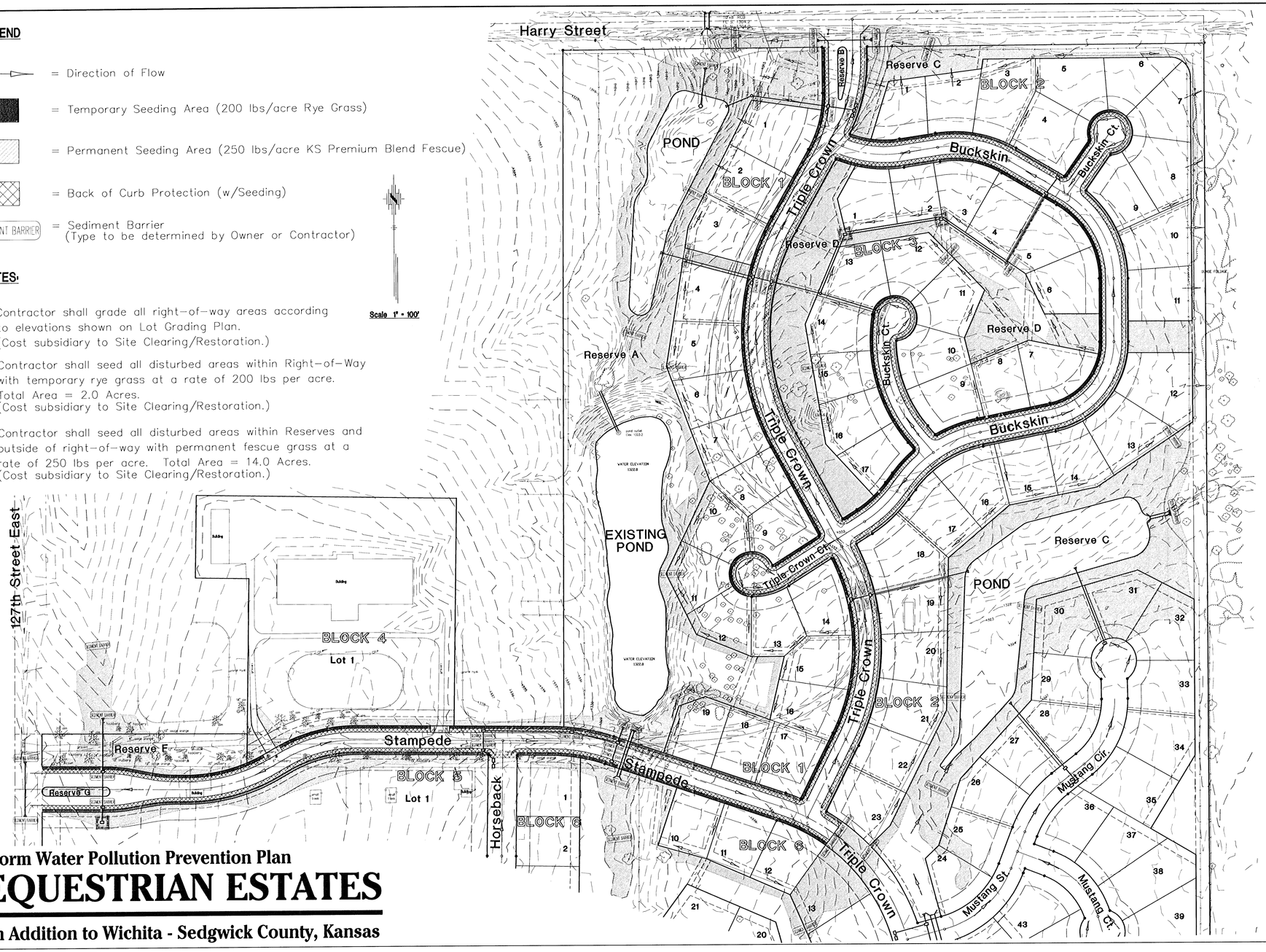
= Back of Curb Protection (w/Seeding)

SEDIMENT BARRIER = Sediment Barrier (Type to be determined by Owner or Contractor)

NOTES:

1. Contractor shall grade all right-of-way areas according to elevations shown on Lot Grading Plan. (Cost subsidiary to Site Clearing/Restoration.)
2. Contractor shall seed all disturbed areas within Right-of-Way with temporary rye grass at a rate of 200 lbs per acre. Total Area = 2.0 Acres. (Cost subsidiary to Site Clearing/Restoration.)
3. Contractor shall seed all disturbed areas within Reserves and outside of right-of-way with permanent fescue grass at a rate of 250 lbs per acre. Total Area = 14.0 Acres. (Cost subsidiary to Site Clearing/Restoration.)

Scale 1" = 100'



Storm Water Pollution Prevention Plan

EQUESTRIAN ESTATES

An Addition to Wichita - Sedgwick County, Kansas

No.	Date	By	Approved	Revision
1				
2				
3				
4				

EQUESTRIAN ESTATES - PHASE 1
DRAINAGE IMPROVEMENTS
STORM WATER POLLUTION PREVENTION PLAN
CITY OF WICHITA, KANSAS
MICHAEL L. LAMBERT, P.E. CITY ENGINEER
C.O.W. Project # 468-83320 O.C.# 751305

POE & ASSOCIATES OF KANSAS, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 209 • Wichita, KS 67208-4242
Phone: 316/685-4111 • FAX: 316/685-4444

FINAL

Designed By: J. Ubert / J. Dickman
Drawn By: J. Dickman
Poe Job No.: 1694A
Date: March 2002

Sheet 18 of 20

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C1	215.00	50.00	76.45	93.59	S33°49'55"W	246°22'28"
C2	96.72	150.00	44.61	95.32	N74°04'50"E	33°07'00"
C3	129.47	250.00	66.22	128.03	N14°28'35"E	29°40'20"
C4	164.98	318.00	84.29	162.65	N14°28'35"E	29°40'20"
C5	252.29	50.00	50.00	58.00	N53°06'58"W	289°05'56"
C6	99.51	271.00	50.32	98.95	N46°59'59"E	21°02'20"
C7	69.36	121.00	35.99	68.38	N74°04'50"E	33°07'00"
C8	91.35	279.00	46.09	90.95	S45°51'37"W	18°45'41"
C9	277.90	321.00	148.27	269.21	S15°09'06"E	49°35'04"
C10	223.44	50.00	63.95	78.78	N42°20'47"W	256°12'33"
C11	496.88	497.00	272.73	478.19	S90°31'02"W	57°30'49"
C12	164.51	250.00	85.39	161.56	S79°37'28"E	37°42'09"
C13	292.95	170.00	188.93	255.15	N39°21'27"E	78°30'46"
C14	110.81	270.00	57.71	110.03	S66°55'29"W	23°30'23"
C15	220.39	220.00	120.44	211.29	N39°35'51"W	57°23'52"
C16	163.71	240.00	85.19	160.56	N79°16'02"W	39°05'01"
C17	9.33	220.00	4.66	9.33	N56°30'59"W	02°25'44"
C18	29.18	45.00	15.12	28.67	N71°49'01"W	37°09'04"
C19	41.79	45.00	22.54	40.30	N26°38'04"W	53°12'14"

LINE TABLE		
LINE	LENGTH	BEARING
L1	268.83	N28°13'58"W
L2	146.26	S57°31'05"W
L3	19.48	N28°13'58"W
L4	71.54	S57°31'05"W
L5	89.41	N81°11'27"E
L6	25.98	N58°28'46"E
L7	208.65	N59°15'45"E
L8	139.46	S00°05'04"W
L9	154.19	S78°39'50"W
L10	53.40	N39°57'08"W
L11	166.71	S34°53'02"W
L12	160.08	S59°43'52"E
L13	88.51	N00°23'35"W
L14	23.65	N29°16'45"E

Exception to Plat

MINIMUM BUILDING ELEVATIONS		
Minimum Low Opening Elevation		
Location	NGVD Datum	City Datum
Lots 1-5, Blk 1	1316.0	128.8
Lots 6-19, Blk 1	1327.3	139.9
Lots 12-32, Blk 2	1326.4	139.0
Lots 1-9, Blk 6	1335.0	147.6
Lot 12, Blk 6	1335.3	147.6
Lots 21-26, Blk 6	1335.0	147.6

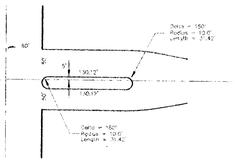
KENT E. HILL LICENSED LS-984 8/14/01

EQUESTRIAN ESTATES

An Addition to Wichita - Sedgwick County, Kansas

(Associated Zone Case PUD 2000-0001)

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C20	442.12	563.00	233.54	425.51	S09°56'31"E	54°42'45"
C21	133.56	417.50	67.31	133.02	N80°29'47"W	17°50'01"
C22	242.62	453.00	124.35	239.73	N16°20'21"E	30°41'14"
C23	92.35	253.00	46.70	91.84	N10°43'04"W	20°54'56"
C24	276.77	300.00	149.12	267.35	S05°15'10"W	52°51'36"
C25	252.26	53.00	35.82	58.02	N73°25'49"E	289°04'24"
C26	358.23	427.00	190.82	347.82	N25°20'04"W	48°04'06"
C27	206.70	220.00	111.58	199.19	N48°10'01"E	53°48'36"
C28	159.51	427.00	80.34	187.95	N02°20'58"W	25°42'49"
C29	185.42	600.00	93.46	184.69	N83°16'51"E	17°42'24"
C30	104.25	250.00	52.89	103.48	N81°39'31"W	23°53'30"
C31	252.29	50.00	33.81	58.90	S24°23'52"E	289°05'56"
C32	81.98	250.00	41.35	81.61	S75°00'06"W	18°47'19"
C33	111.93	603.00	56.15	111.61	S05°03'34"W	10°38'02"
C34	141.23	600.00	70.94	140.90	S78°27'21"E	13°29'11"
C35	62.10	205.00	31.29	61.86	S11°53'39"E	17°21'02"
C36	53.55	205.00	26.93	53.39	N13°05'14"W	14°57'55"
C37	252.29	50.00	70.80	58.90	S80°47'11"W	289°05'56"
C38	68.83	300.00	34.64	68.31	S85°53'29"W	15°56'40"
C39	70.45	45.00	44.77	63.47	N44°48'48"E	89°42'04"
C40	252.29	50.00	36.80	58.90	N04°01'11"E	289°05'56"
C41	62.74	427.00	31.42	62.68	N87°17'42"W	08°25'55"
C42	164.83	180.00	88.56	158.95	N42°47'53"W	52°28'05"
C43	133.37	250.00	68.31	131.79	S36°24'01"W	30°33'57"
C44	164.95	180.00	88.74	159.24	N25°25'48"E	52°30'24"
C45	252.29	50.00	36.80	58.00	S85°12'36"W	289°05'56"
C46	168.58	317.50	86.32	166.59	N75°27'15"E	30°25'05"
C47	202.73	382.50	103.61	200.36	N75°18'42"E	30°22'02"



SCALE IN FEET 1" = 100'

LEGEND

Utility Easement	20' U.E.
Drainage Easement	20' Dr. E.
Iron Set	
Building Setback	30' SB
Curve Label	C#
Line Label	L#
Center Line	CL
Monument Found	

NOTE:

This Addition is subject to the conditions of the Planned Unit Development PUD 2000-00001.

BENCHMARKS:

NGVD Datum

1. Railroad spike in power pole, approximately 25' south and 30' east of W 1/4 Corner, Section 35-27-02E. Elevation 1349.65
2. Square on south hub guard of RCBC suit west of NW Corner of Section 35-27-2E. Elevation 1311.90

LINE TABLE		
LINE	LENGTH	BEARING
L14	58.08	S21°11'03"E
L15	92.74	S30°15'37"E
L16	100.71	S11°41'04"W
L17	255.28	N00°59'51"E
L18	108.80	N89°27'13"W
L19	85.04	S74°56'59"W
L20	66.22	N05°36'19"W
L21	257.23	S10°22'15"W
L22	90.11	N65°36'28"E
L23	84.93	N00°15'37"W
L24	117.83	S71°42'46"E
L25	57.73	N20°34'12"W
L26	65.45	N03°12'49"W
L27	108.75	S85°58'41"E
L28	89.87	N77°15'49"E
L29	192.27	N26°28'44"E
L30	399.87	S71°32'12"E
L31	99.13	N11°41'06"E
L32	39.52	S21°09'30"W
L33	74.82	N68°52'57"W
L34	48.99	S21°07'30"W
L35	35.99	N18°24'48"W
L36	84.95	S06°49'24"E
L37	8.74	S10°22'45"W
L38	323.38	N89°27'13"W
L39	28.83	S00°07'42"W
L40	376.86	N89°30'16"W

MINIMUM BUILDING ELEVATIONS		
Minimum Low Opening Elevation		
Location	NGVD Datum	City Datum
Lots 1-5, Blk 1	1316.0	128.5
Lots 6-19, Blk 1	1327.3	139.9
Lots 12-32, Blk 2	1326.4	139.0
Lots 1-9, Blk 6	1335.0	147.6
Lot 10, Blk 6	1335.0	147.6
Lots 21-26, Blk 6	1335.0	147.5

EQUESTRIAN ESTATES

An Addition to Wichita - Sedgwick County, Kansas

(Associated Zone Case PUD 2000-0001)

8/23/01