SHEET NO.	TOTAL SHEETS
1	26

CITY OF WICHITA, KANSAS
JAMES L. ARMOUR, P.E. - CITY ENGINEER

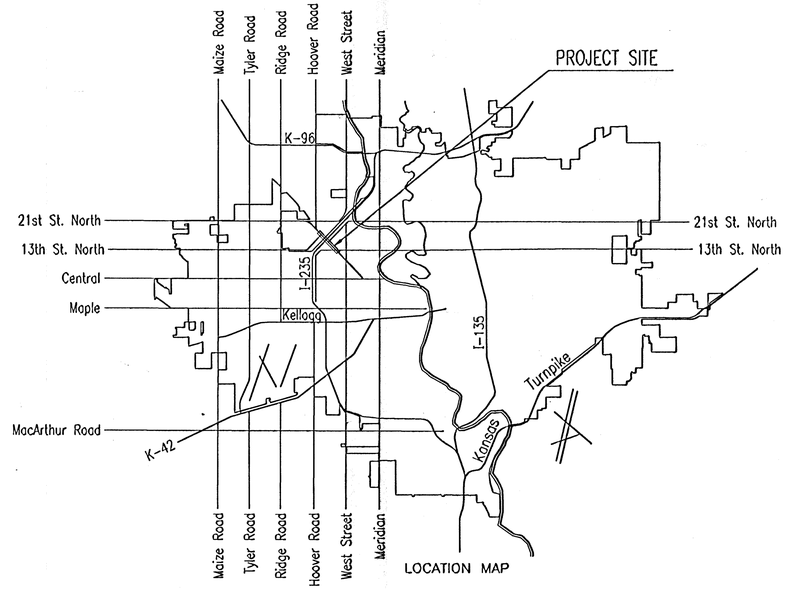
STREET IMPROVEMENTS

FOR

ZOO BOULEVARD TURN LANE MODIFICATIONS

CITY OF WICHITA PROJECT NO. 472-83986
OCA NO. 706889

INDEX OF SHEETS



LOCATION MAP

GENERAL NOTES

ALL CONSTRUCTION WORK AND MATERIALS IN THIS PROJECT SHALL COMPLY WITH CITY OF WICHITA STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF CITY PROJECTS UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

UTILITY SERVICE LINES, POLES, BOXES, METERS, ETC. ARE TO BE ADJUSTED AS NECESSARY BY OTHERS PRIOR TO CONSTRUCTION UNLESS THE PLANS SPECIFICALLY CALL FOR THEIR ADJUSTMENT BY THE CONTRACTOR OR UNLESS THE PLANS IDENTIFY A UTILITY,TO BE ADJUSTED BY ITS OWNER DURING CONSTRUCTION. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS, HAVE BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND ARE EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE CONTRACTOR WILL BE REQUIRED TO FIELD LOCATE EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION AND TO WORK AROUND THE EXISTING UTILITIES WHICH DO NOT CONFLICT WITH PROPOSED CONSTRUCTION.

NOTIFY WESTAR TO ARRANGE FOR APPROPRIATE SAFETY PRECAUTIONS BEFORE WORKING NEAR A HIGH VOLTAGE POWER LINE IN ACCORDANCE WITH THE OVERHEAD POWERLINE ACCIDENT PREVENTION ACT.

PROVIDE A FULL DEPTH SAW CUT WHERE REMOVAL OF THE EXISTING PAVEMENT IS REQUIRED, EXCEPT WHERE AN EXISTING JOINT IS WITHIN 3 FEET OF THE REMOVAL LINE, THEN THE REMOVAL SHALL EXTEND TO THE JOINT. SAW CUTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO OTHER CONTRACT ITEMS.

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 REMOVED FROM THE MEDIAN SHALL BE CAREFULLY REMOVED AND REPLANTED WITHIN THE EXISTING R/W AS DIRECTED BY THE ENGINEER. TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH PROPOSED NEW CONSTRUCTION SHALL BE SAVED AND PROTECTED FROM DAMAGE.

RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES SHALL BE DISPOSED OF ON SITES TO BE PROVIDED BY THE CONTRACTOR AND APPROVED AS NOTED BELOW.

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 ARCHEOLOGICAL INVESTIGATIONS UNLESS BURIED IN A PREVIOUSLY APPROVED BORROW LOCATION.

CONTRACTOR SHALL SATISFY HIMSELF OF SUBSURFACE CONDITIONS PRIOR TO BIDDING.

STOCKPILING AND/OR DOUBLE HANDLING OF EXCAVATED SOIL REQUIRED TO COMPLETE THE EMBANKMENT, INCLUDING TOPSOIL, WILL NOT BE PAID FOR SEPARATELY BUT WILL BE SUBSIDIARY TO OTHER CONTRACT ITEMS.

CONTRACTOR SHALL PROVIDE A MINIMUM FORTY-EIGHT (48) HOUR ADVANCE NOTICE (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO BEGINNING ANY EXCAVATION, TO KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470 TO REQUEST THE FOLLOWING UTILITY COMPANIES TO LOCATE ALL EXISTING LINES WITHIN THE PROJECT AREA: KANSAS GAS SERVICE, AQUILA NATURAL GAS, WESTAR, SBC, COX COMMUNICATIONS, CITY OF WICHITA SEWER MAINTENANCE AND CITY OF WICHITA WATER DEPARTMENT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR WILL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS. SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH STATE LAWS.

THE WATER DEPARTMENT SHALL FIELD LOCATE WATER VALVES ONE TIME DURING CONSTRUCTION WHEN REQUESTED BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PRESERVE SUCH FIELD LOCATIONS DURING THE CONSTRUCTION PROCESS. WATER VALVES, WATER VALVE BOXES OR FIRE HYDRANTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.

THE CONTRACTOR SHALL ADJUST WATER VALVE BOXES AS DIRECTED BY THE ENGINEER. THIS WORK TO BE SUBSIDIARY TO OTHER BID ITEMS.

TRAFFIC SHALL BE CARRIED THROUGH CONSTRUCTION. TWO THRU LANES IN EACH DIRECTION MUST BE MAINTAINED AT ALL TIMES.

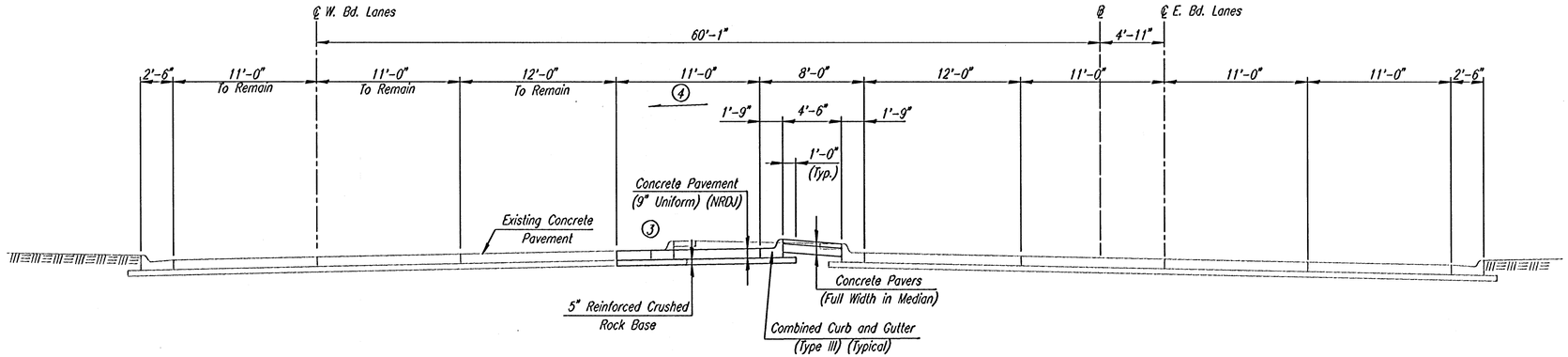
GARY D. SCHOCK LICENSED 8/01/05 9838 PROFESSIONAL ENGINEER KANSAS

JULY 2005

PLANS PREPARED BY
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

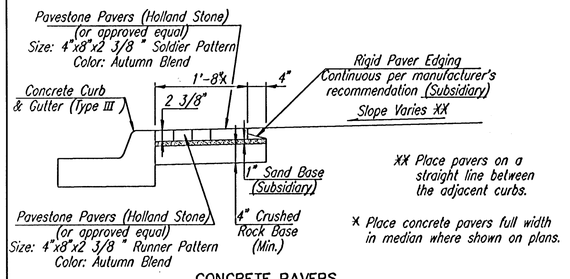
DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\01-Title Sheet 08-01-2005 09:11:09 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	2	26



TYPICAL SECTION – WEST BOUND

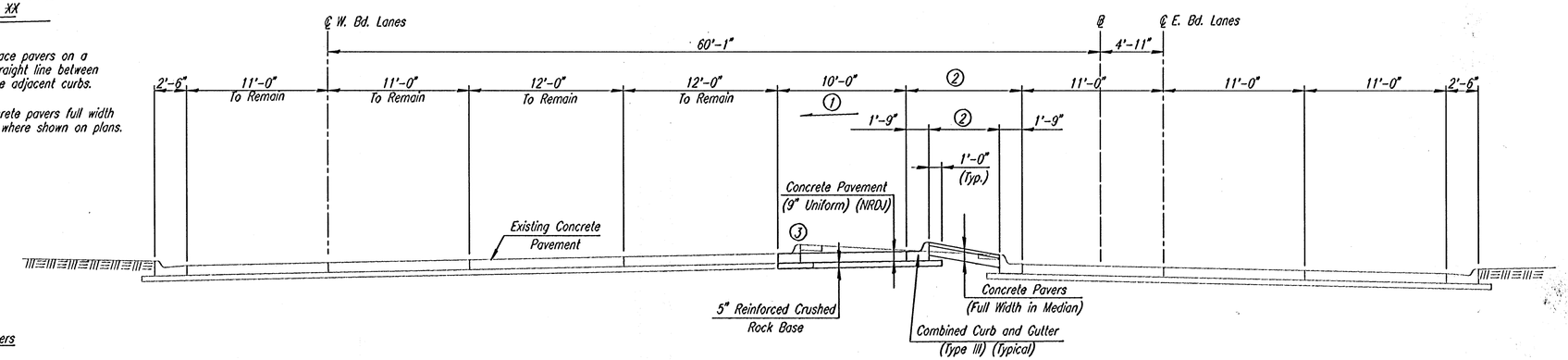
Sta. 1198+60 to Sta. 1200+10



XX Place pavers on a straight line between the adjacent curbs.

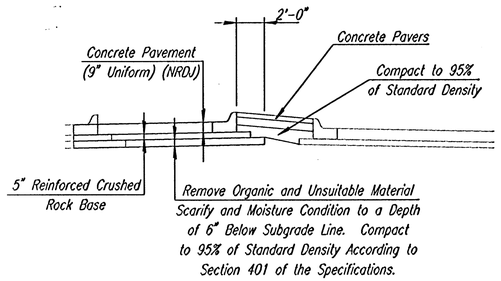
X Place concrete pavers full width in median where shown on plans.

CONCRETE PAVERS

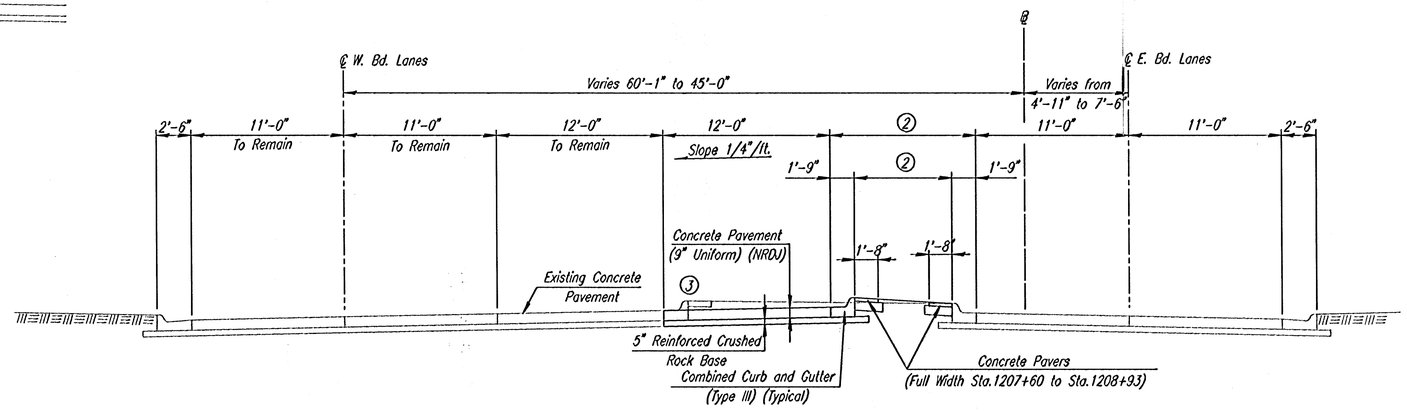


TYPICAL SECTION – WEST BOUND

Sta. 1200+75 to Sta. 1204+85



COMPACTION DIAGRAM



TYPICAL SECTION – WEST BOUND

Sta. 1204+85 to Sta. 1209+68.32

① Slope 1.6% or varies–See spot elevations.

② Width varies– See plan.

③ Remove Existing Pavement and Curb. See Plans.

④ Slope same as adjacent pavement. See spot elevations

No.	Revisions	By	Date
1			

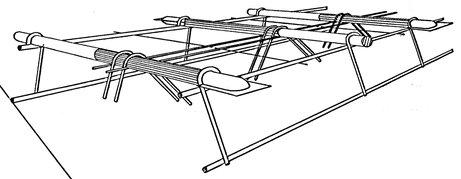
TYPICAL SECTIONS
ZOO BOULEVARD

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

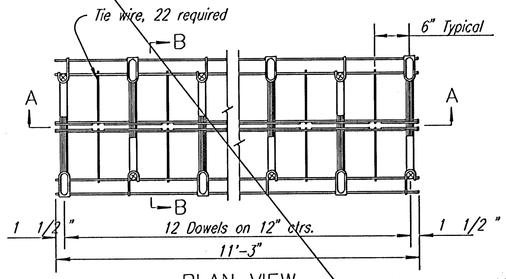
Designed by	JPM	Checked by	
Drawn by	JGP	Date JUNE 2004	Job No. 04213

DSNR: BER OPER: REJ SCALE: 1=5.00
I:\2004\04213\DWG's 07-28-05\02-Typical Sections 07-29-2005 10:19:14 am

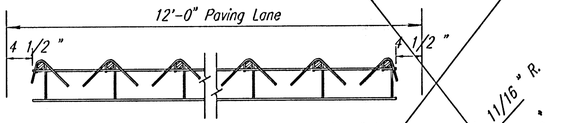
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-83986		11	26



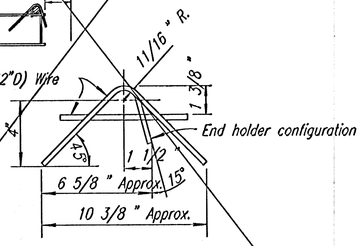
PERSPECTIVE VIEW

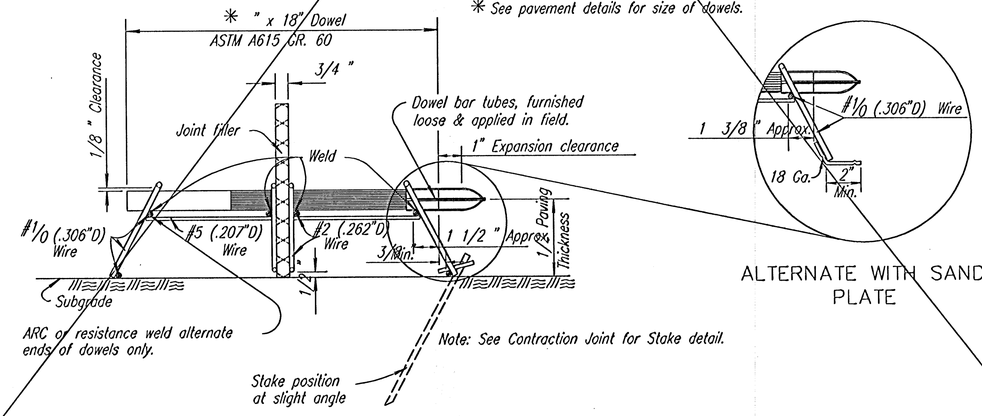


PLAN VIEW



SEC. A-A





SEC. B-B

ALTERNATE WITH SAND PLATE

EXPANSION JOINT

Note: Wire sizes shown are minimum required.
Sides held together with tie wire, allowing quick separation of sides & insertion of expansion material, provided in field.

One length of Preformed Expansion Joint filler (Type B), or other approved material, cut to fit crown and subgrade shall be used for each lane of pavement as expansion joint filler.

A string line shall be stretched between the pavement forms along the center line of the joint.

Each dowel bar shall be coated with an epoxy coating with the average film thickness of not less than 10 mils on any bar, with individual determinations within a tolerance of + 3 mils of the average. The coating need not be applied to the end faces of the bars and will not be required within 2 inches of the end which will be fixed in the supporting basket by welding. The coating material shall be a powdered epoxy resin approved by the Engineer of Materials and shall be uniformly applied according to accepted practices and the resin manufacturer's recommendations.

In order to identify the location of the bond breaker application, the working end of dowel and the supporting leg shall receive a light application of red paint at the place of fabrication. The bond breaker to be applied in the field prior to concrete placement shall consist of coating approximately three-fifths of the length of each dowel bar with hard grease at the working end identified by the red paint.

The cutting to length of the dowel bars shall be done in such a manner to result in no appreciable deformation of the ends.

The entire joint assembly shall be carefully leveled up so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Any grease scraped off the dowels in assembling the joint shall be replaced. Any excess grease on the dowel holders shall be removed.

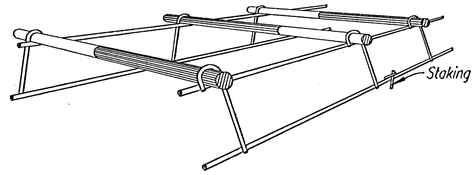
After the complete expansion joint is assembled, it shall be checked to be certain that the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab. The dowels shall be checked to be certain that they are level and will remain in a position parallel with the finished surface of the slab.

Concrete shall be placed over and adjacent to the joint in accordance with the requirements of the Specifications.

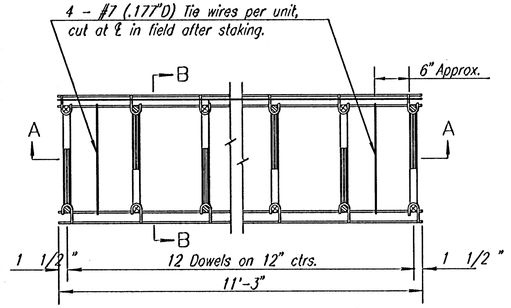
To finish the joint after completion of machine finishing, floating and straight edging of the surface, the concrete over the filler shall be carefully removed and the joint edged with an edger of the proper size.

Expansion Joint material is to be installed in the field.

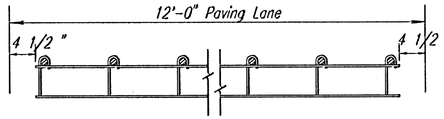
Other approved designs may be used in lieu of the type shown.



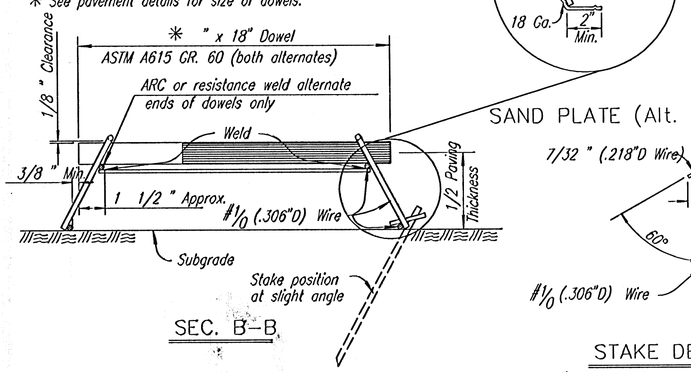
PERSPECTIVE VIEW



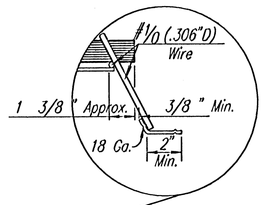
PLAN VIEW



SEC. A-A

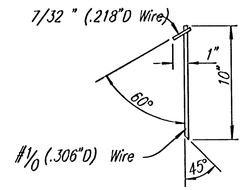


SEC. B-B



SAND PLATE (Alt. 1)

CONTRACTION JOINT



STAKE DETAIL

(6 Pieces minimum required)

GENERAL NOTE

Dowel bar insertion may be by mechanical dowel placers regardless of the joint spacing.

Each dowel bar shall be coated with an epoxy coating that meets the standard specifications. The coating material shall be a powdered epoxy resin approved by the Chief, Bureau of Materials and Research and shall be uniformly applied according to accepted practices and the resin manufacturer's recommendations. For Alt. 1 the coating need not be applied to the end faces of the bars and will not be required within 50 mm of the end which will be fixed in the supporting basket by welding.

The cutting to length of the dowel bars shall be done in such a manner to result in no appreciable deformation of the ends.

Alt. 1 (Baskets)

Wire sizes shown are minimum required.

Basket to be staked to sub-grade, as shown. Ramset or similar type fastener with clip to be used when subgrade condition requires it.

A string line shall be stretched between the pavement forms along the center line of the joint. The position of the joint shall be carefully marked so that the saw cut will coincide with the center line of the joint.

In order to identify the location of the bond breaker application, the working end of dowel and the supporting leg shall receive a light application of red paint at the place of fabrication. The bond breaker to be applied in the field prior to concrete placement shall consist of coating approximately three-fifths of the length of each dowel bar with hard grease at the working end identified by the red paint.

The entire joint assembly shall be carefully leveled so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Any coating scraped off the dowels in assembling the joint shall be replaced.

After the complete contraction joint is assembled, it shall be checked to be certain that the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless shown otherwise on the plans. The dowels shall be checked to be certain that they are level and will remain in a position parallel with the finished surface of the slab.

Concrete shall be placed over and adjacent to the joint in accordance with the requirements of the Specifications.

Other approved designs may be used in lieu of the type shown.

Alt. 2 (Mechanical placement)

Joint spacing shall be normal to centerline.

The pavement shall be placed and consolidated to full depth prior to insertion of the dowel bars.

The dowel bars shall be coated with a bond breaking agent prior to insertion into the plastic concrete.

The dowel bars shall be inserted into the plastic concrete ahead of the finishing beam or screed.

The installing device shall consolidate the concrete around the dowel bars such that no voids exist, without the supplemental use of hand held vibrators.

The dowel bars shall be located within one inch of the planned transverse location and within the range of depth of D /2 ± 0.1 D measured from mid depth and mid length of the bar where D represents the pavement thickness.

The dowel bars shall be located within two inches of the planned longitudinal location.

The dowel bars shall be parallel to the pavement surface and centerline within a tolerance of one half inch in 18 inches in both the vertical and horizontal direction.

The forward movement of the finishing beam or screed shall not be interrupted by the inserting of the dowel bars.

A positive method of marking the locations of the transverse joints shall be provided.

NO.	DATE	REVISIONS	BY	APP'D
6	4- 9-03	Rev. General Note on Epoxy coating	S.W.K.	J.O.B.
5	4-24-90	Revised notes, added Alt. 1 &2 Cont.Jt.	R.J.S.	J.O.B.
4	7-30-87	Added dowel size note	W.L.H.	J.O.B.

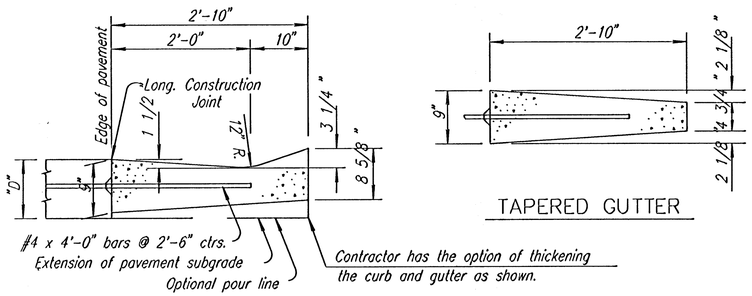
KANSAS DEPARTMENT OF TRANSPORTATION

CONTRACTION & EXPANSION JT. DOWEL ASSEMBLIES

~~RD735~~

FHWA APPROVAL	6- 4-03	APP'D. James O. Brewer	
DESIGNED	DETAILED Bowser	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK. Hecht	QUAN.CK.	TRACE CK. Hecht

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-83986		12	26

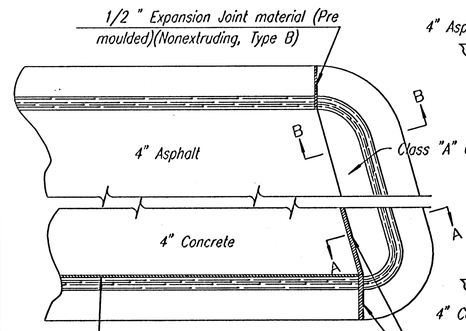


DETAIL OF GUTTER
(Normal section)

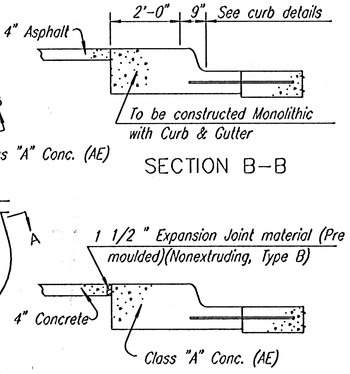
TAPERED GUTTER

Note: Concrete gutter contains 0.0651 cu. yds. Class A Concrete (AE) per lin. ft..

GUTTER

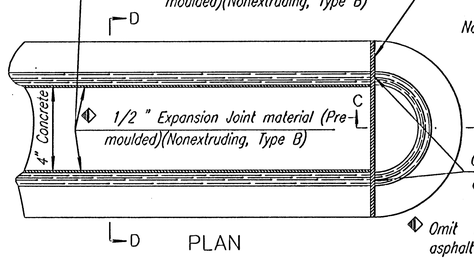


PLAN



SECTION B–B

SECTION A–A

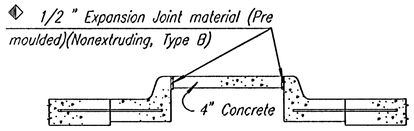


PLAN

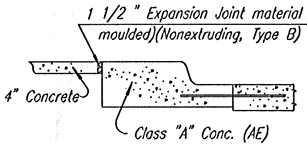
Note: Additional Class "A" Conc.(AE) needed to complete median nose shall be subsidiary to the bid item Combined Curb & Gutter.

Omit 1 1/2 " joint material between back of nose and asphalt filled median.

◈ Omit 1/2 " Expansion joint material when asphalt is used in median.



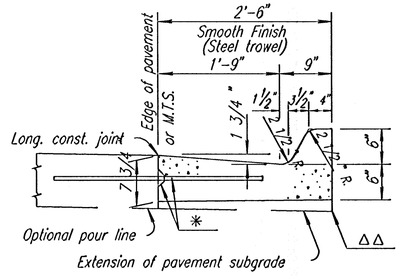
SECTION D–D



SECTION C–C

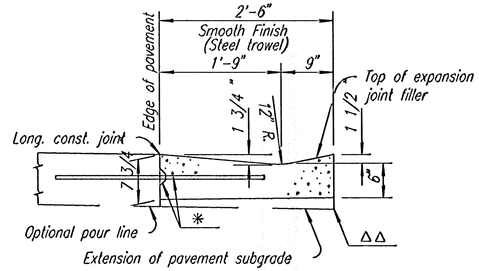
Note: Expansion joints shall be placed in concrete median as follows. In long runs expansion joints shall be 1/2 " expansion joint material (Nonextruding, Type B) flush with the surface. Expansion joints in the median shall match expansion joints in the curb and gutter with a maximum spacing of 125'. Plane of weakness in median shall match plane of weakness in curb & gutter.

TYPICAL NOSE DETAILS FOR RAISED MEDIANS



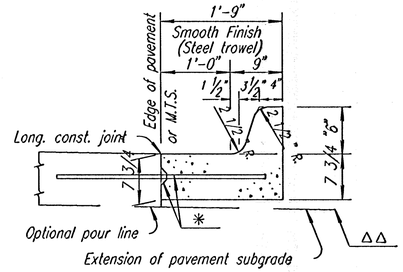
TYPICAL SECTION

COMBINED CURB & GUTTER – TYPE I (2'–6" WIDTH)



TYPICAL SECTION

COMBINED CURB & GUTTER – TYPE II (2'–6" WIDTH)



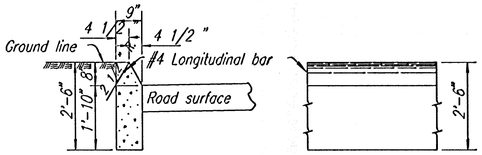
TYPICAL SECTION

COMBINED CURB & GUTTER – TYPE III (1'–9" WIDTH)

* Longitudinal construction joint and #4 x 3'-0" bars @ 2'-6" ctrs., where concrete pavement is constructed.

ΔΔ Contractor has the option of thickening the curb and gutter as shown.

Note: Use Class "A" Concrete (AE) throughout. All exposed edges shall be finished with an edging tool. Place a 1" premoulded Expansion Joint Filler (nonextruding, Type B) at a spacing of not to exceed 250'.



SECTION ELEVATION

PROTECTION CURB 8"

GENERAL NOTE

Combined curb and gutter or gutter adjoining concrete pavement may, at the contractor's option, be poured either monolithically or separately, using either the mix used in the concrete pavement or Class "A" Concrete (AE). The combined curb and gutter or gutter shall have the same section as shown on the plans. If poured monolithically, dowel bars may be omitted from the combined curb and gutter or gutter, but the wire mesh shall be extended to 6" or less from the back of the curb or gutter. Pavement joints shall be continued through curb or gutter and no other planes of weakness will be required. Joints in the combined curb and gutter or gutter are to be filled with the same material as used for the pavement joints.

Expansion joints in the combined curb and gutter are to be placed opposite expansion joints in the pavement.

Where combined curb and gutter or gutter does not abut concrete pavement or concrete base course, omit tie bars and longitudinal construction joint and place a 1" premoulded Expansion Joint Filler (Nonextruding, Type B) cut to the dimensions of the combined curb and gutter or gutter, at a spacing of not to exceed 250' and at the ends of curb returns.

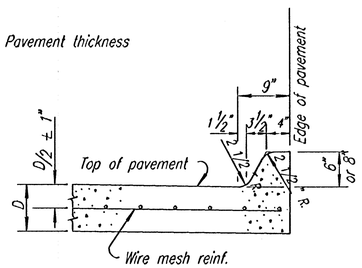
Where combined curb and gutter or gutter is adjacent to bituminous construction, planes of weakness shall be constructed at 20'-0" intervals.

A 4' length of transition from normal gutter section to the tapered gutter section shall be used at the ends of each run of gutter except where the gutter abuts a curb, such as at the end of a bridge. Inlets shall be located so as not to fall within this transition section.

Where pressure relief joint (Urethane Foam) is placed across the pavement, and gutter or curb and gutter is continued on for more than 10', use Type B, nonextruding, joint filler through gutter section, shaped to fit gutter or curb and gutter. Material may be solid Type B, approximately 4" thick, or other thickness pieces (Type B), bonded together with cold mastic or other material, as approved by the Engineer.

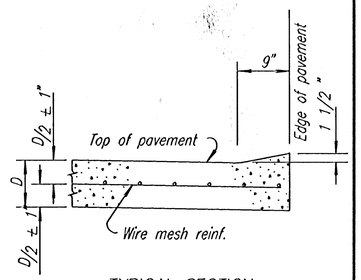
For expansion joint treatment where combined curb and gutter or gutter abuts a bridge wing on a U type abutment see bridge drawings.

Longitudinal joints shall be sawed and sealed with joint sealant, see Special Provisions for type.



TYPICAL SECTION

6" OR 8" EDGE CURB
(MONOLITHIC)



TYPICAL SECTION

1 1/2 " EDGE CURB
(MONOLITHIC)

Note: Planes of weakness are to be constructed over the contraction joints in the concrete pavement. A 1" premoulded Expansion Joint Filler (Nonextruding, Type B) cut to the dimensions of the Edge Curb shall be used over the expansion joints in the concrete pavement.

EDGE CURB

NO.	DATE	REVISIONS	BY	APP'D
1 3	3-20-96	Del. Curb & Gutter Ref. to Br. Appr.	R.S.	J.O.B.
1 2	12- 4-94	Rev. Joint Sealant	R.S.	J.O.B.
1 1	5- 5-89	Rev. U type abut. note, GENERAL NOTE	R.S.	J.O.B.
10	10-15-87	Silicone joint sealant GENERAL NOTE	R.S.	J.O.B.
9	4-20-85	Note – U type abutments	W.H.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CURB, GUTTER AND COMBINED CURB & GUTTER

~~RD635~~

FHWA APPROVAL	5-16-96	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Seitz

DSNR: BER OPER: REG SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\12-Curb Gutter & Comb Curb Gutter 07-29-2005 12:18:18 cm

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	13	26

SUMMARY OF SURFACING QUANTITIES

STATION TO STATION		CONCRETE PAVEMENT (9" UNIFORM)(NRDJ)(AE) (SQ. YDS.)	5" REINFORCED CRUSHED ROCK BASE (SQ. YDS.)	MEDIAN CONCRETE PAVEMENT (4") (SQ. YDS.)
1198+60.00	1200+10.00	208.53	245.96	
1200+75.00	1201+10.00	73.15	74.98	
1201+10.00	1204+10.00	332.70	424.15	
1204+10.00	1204+85.00	56.94	80.36	
1204+85.00	1208+50.00	489.79	600.24	
1208+50.00	1209+68.32	79.69	116.19	
Ramp B		11.40	19.67	9.70
Totals		1252.20	1561.55	9.70

SUMMARY OF CONCRETE PAVERS

STATION TO STATION		CONCRETE PAVERS REMOVED (SQ. YDS.) F.I.O.	CONCRETE PAVERS RESET (SQ. YDS.)	CONCRETE PAVERS NEW (SQ. YDS.)	4" CRUSHED ROCK BASE (SQ. YDS.)
1198+60.00	1199+95.00	59.72	53.75	3.29	57.04
1201+10.00	1204+10.00	124.01	111.61	66.43	178.04
1204+10.00	1204+60.00	18.47	16.62	15.38	32.00
1204+60.00	1207+60.00	111.23	100.11	13.12	135.62
1207+60.00	1208+50.00	33.34	30.01	40.72	70.73
1208+50.00	1208+93.00	16.31	14.68	18.36	33.04
1208+93.00	1209+68.32	24.18	21.76	2.83	29.47
Totals		387.26	348.53	160.14	535.94

SUMMARY OF COMBINED CURB & GUTTER (AE) (TYPE III)

STATION TO STATION		QUANTITY (LIN. FT.)
1198+60.00	1199+80.00	122.79
1201+10.00	1204+10.00	305.34
1204+10.00	1205+19.00	109.12
1205+19.00	1208+50.00	331.00
1208+50.00	1209+68.32	119.48
Ramp B		27.39
Totals		1015.12

NOTES

1. CONCRETE PAVERS SHALL CONSIST OF EITHER NEW PAVERS OR EXISTING PAVERS REMOVED FROM THIS PROJECT. EXISTING PAVERS THAT ARE REUSED MUST BE SUBSTANTIALLY EQUAL TO THE NEW PAVERS SPECIFIED AND IN GOOD CONDITION, FREE FROM CRACKS OR CHIPS. CONTRACTOR SHALL BE PAID PER THE UNIT PRICE BID PER SQUARE YARD OF "CONCRETE PAVERS" FOR BOTH NEW AND RESET PAVERS. QUANTITIES SHOWN ABOVE ARE BASED ON 90% OF THE EXISTING PAVERS BEING REUSED. UNIT PRICE WILL NOT BE ADJUSTED REGARDLESS OF THE ACTUAL PERCENTAGE OF PAVERS REUSED.
2. EXISTING CONCRETE PAVERS WITHIN THE CONSTRUCTION LIMITS SHALL BE CAREFULLY REMOVED FOR REUSE ON THE PROJECT. QUANTITY ABOVE FOR "CONCRETE PAVERS REMOVED" IS GIVEN FOR INFORMATION ONLY AND SHALL BE CONSIDERED PART OF THE BID ITEM "CONCRETE PAVERS".
3. CONCRETE PAVERS SHALL BE PLACED ON A STRAIGHT LINE SLOPE BETWEEN THE ADJACENT CURBS. THE CRUSHED ROCK BASE SHALL BE PREPARED TO THE PROPER ELEVATION AND SLOPE, AND SHALL BE A MINIMUM OF 4" THICK, AND SHALL BE COMPACTED.

SUMMARY OF PAVEMENT MARKING

ITEM	QUANTITY	UNIT
6" White - Dashed	55	L.F.
6" White - Broken	205	L.F.
6" White - Solid	325	L.F.
24" White - Solid	159	L.F.
4" Double Yellow	70	L.F.
4" Yellow - Solid	30	L.F.
4" Yellow - Diagonal	12	L.F.
Symbol - Left Turn Arrow	6	Each

Note: Pavement Marking to be cold plastic.

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Clearing Right of Way	1	Lump Sum
Pavement Removed	230	Sq. Yds.
Excavation	586	Cu. Yds.
Borrow Excavation (Contractor Furnished)	0	Cu. Yds.
Compaction (95% Density)	239	Cu. Yds.
Concrete Pavement (9" Uniform) (NRDJ) (AE)	1252	Sq. Yds.
5" Reinforced Crushed Rock Base	1562	Sq. Yds.
Combined Curb and Gutter (AE) (Type III)	1015	L.F.
Concrete Pavers	509	Sq. Yds.
4" Crushed Rock Base	536	Sq. Yds.
Median Concrete Pavement (4")	10	Sq. Yds.
Temporary Project Seeding	1.0	Acres
Linear Sediment Barrier	980	L.F.
Sod (Bermuda)	2314	Sq. Ft.
Pavement Marking	1	Lump Sum
Signing	1	Lump Sum
Traffic Control	1	Lump Sum
Traffic Signal Modifications (Westdale Drive)	1	Lump Sum

SUMMARY OF EARTHWORK QUANTITIES

STATION TO STATION		EXCAVATION				COMPACTION	WASTE
		COMMON		ROCK		95% Std. Density	COMMON
		CU.YDS.	V.M.F.	CU.YDS.	V.M.F.	CU.YDS.	CU.YDS.
1198+60	1199+20	23.6			-	10.3	23.6
1199+20	1199+65	30.7			-	12.3	30.7
1199+65	1199+95	15.8				6.2	15.8
1200+95	1201+10	8.1				3.0	8.1
1201+10	1204+10	188.9				76.4	188.9
1204+10	1204+85	31.5				13.6	31.5
1204+85	1206+00	54.3				22.9	54.3
1206+00	1208+50	183.6				73.0	183.6
1208+50	1209+68	49.5				21.3	49.5
Total		586.0				239.0	586.0

No.	Revisions	By	Date
1			

SUMMARY & RECAPITULATION OF ROAD QUANTITIES

Professional Engineering Consultants, P.A.
300 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	JPM	Checked by	...
Drawn by	JGP	Date	JUNE, 2004
		Job No.	04213

DSNR: BER OPER: REG SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\13-Quantities 07-29-2005 11:24:50 am

GENERAL NOTES:

1. THIS SHEET IS INTENDED TO PROVIDE GUIDELINES AS TO WHAT TYPES OF BMP'S WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS. CONTRACTORS ARE EXPECTED TO BID PROJECTS ACCORDINGLY.

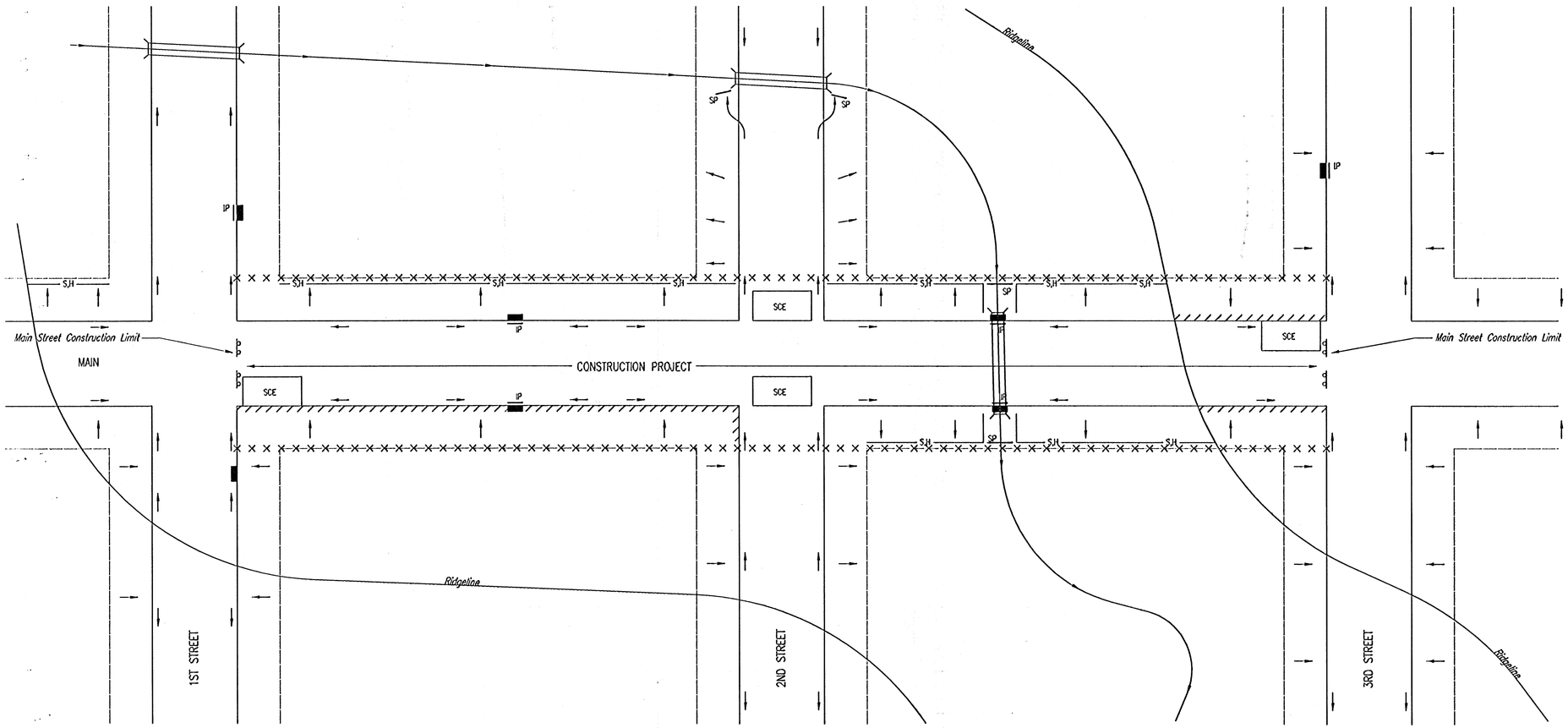
2. BMP'S MUST BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION PROCESS.

3. IF THE PROJECT WILL DISTURB 5 ACRES OR MORE, A FEDERAL/STATE NPDES STORMWATER PERMIT IS REQUIRED. A DETAILED STORMWATER POLLUTION PREVENTION PLAN, IS REQUIRED. THE BMP'S SHOWN ON THIS SHEET ARE CONSIDERED TO BE THE MINIMUM TO BE SHOWN IN THE POLLUTION PREVENTION PLAN.

4. FOR PROJECTS DISTURBING LESS THAN 5 ACRES, CONTRACTORS ARE ENCOURAGED TO PREPARE STORMWATER POLLUTION PREVENTION PLANS PRIOR TO CONSTRUCTION.

5. FAILURE TO USE AND MAINTAIN BMP'S IS A VIOLATION OF SECTION 16.32 OF THE CITY CODE AND WILL SUBJECT THE CONTRACTOR TO THE PENALTIES PROVIDED FOR THEREIN.

6. THE APPLICATION OF BMP'S SHOWN ON THIS SHEET IS FOR SITUATIONS NORMALLY ENCOUNTERED. FROM TIME TO TIME, SITUATIONS WILL ARISE THAT MAY REQUIRE A DIFFERENT BMP OTHER THAN THOSE SHOWN. BMP'S, OTHER THAN THOSE SHOWN, MAY BE UTILIZED AS LONG AS THEY ARE EFFECTIVE AND MAINTAINED.

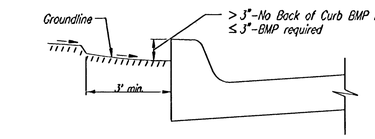


LEGEND

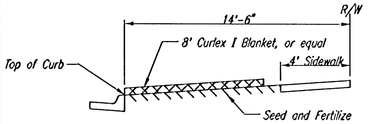
- R-O-W LIMITS
- DRAINAGE FLOW PATH
- R/W LIMIT WITHIN CONSTRUCTION LIMIT
- STORM WATER INLETS
- IP — INLET PROTECTION
- S,H — SILT FENCE OR HAYBALE BMP
- SP — STREAM PROTECTION
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- BACK OF CURB PROTECTION

NOTES:

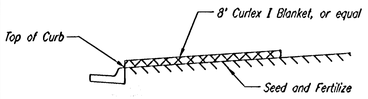
1. GENERAL BMP GOAL IS TO KEEP ALL SEDIMENT CONFINED TO THE CONSTRUCTION SITE, AND OUT OF ALL UNDERGROUND PIPES, DITCHES, AND OTHER DRAINAGE FACILITIES.
2. THE POINT OF COMPLIANCE IS GENERALLY THE RIGHT-OF-WAY LINES WITHIN THE LIMITS OF CONSTRUCTION.
3. BMP'S WILL BE REQUIRED AT ALL POINTS ALONG THE PROJECT WHERE DISTURBED EARTH CAN DRAIN ONTO PRIVATE PROPERTY.
4. INLET PROTECTION DEVICES WILL BE REQUIRED WHEREVER WATER CAN DRAIN OFF THE PROJECT SITE INTO AN INLET, INCLUDING ANY SIDE STREET INLETS.
5. BMP'S SHALL BE INSTALLED AT CREEK CROSSINGS SO AS TO PREVENT SEDIMENT FROM ENTERING THEREIN.
6. STABILIZED CONSTRUCTION ENTRANCES SHALL BE PROVIDED, AS NEEDED, TO PREVENT MUD FROM TRACKING ONTO STREETS NOT UNDER CONSTRUCTION AND ON STREETS WITHIN THE PROJECT LIMITS IF TRAFFIC IS BEING MAINTAINED THROUGH THE PROJECT.
7. ANY MUD TRACKED ONTO STREETS MUST BE REMOVED AT THE END OF EACH WORK DAY.
8. THE CONTACTOR WILL BE REQUIRED TO PLACE BMP'S BACK OF CURB, WHENEVER WATER CAN DRAIN OVER CURB, TO KEEP ERODED SOIL OUT OF THE GUTTERLINES, IN ACCORDANCE WITH THE FOLLOWING:
   A. THE BMP REQUIRED WILL BE CURLEX I EXCELSIOR BLANKET, OR EQUAL. SAID BLANKET SHALL BE PLACED OVER THE APPROPRIATE SEED AND FERTILIZER, AS SPECIFIED IN THE PROJECT SPECIFICATIONS. (SEE BACK OF CURB PROTECTION DETAIL)
   B. THIS BMP SHALL BE INSTALLED IMMEDIATELY WHENEVER THE CURB IS BACKFILLED TO WITHIN 3" OF THE TOP OF CURB. (SEE CURB BACKFILL DETAIL) OTHER BMP'S MAY BE REQUIRED AT LOCATIONS WHERE CONCENTRATED FLOW CARRIES SEDIMENT OVER THE CURB.
   C. ADDITIONALLY, OTHER BMP'S (HAYBALES, SILT FENCE, ETC.) WILL BE INSTALLED AT LOCATIONS OF CONCENTRATED FLOW RESULTING IN SEDIMENT OVERRUNNING THE MAT.
   D. SHOULD THE PROJECT PLANS SPECIFY THAT THE RIGHT-OF-WAY IS TO BE SODDED, THE EXCELSIOR MAT WILL NOT BE REQUIRED SO LONG AS THE SOD IS PLACED WITHIN 48 HOURS AFTER CURB BACKFILL REACHES A HEIGHT OF 3" OR LESS FROM TOP OF CURB. (SEE DETAIL)



CURB BACKFILL DETAIL

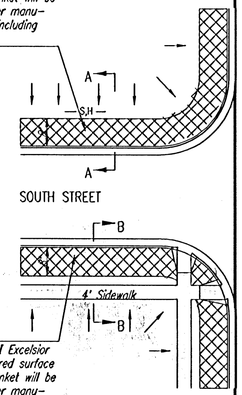


SECTION B-B



SECTION A-A

BMP-Install 8' wide Curlex I Excelsior Blanket, or equal, on prepared surface back of curb. Edge of blanket will be at back of curb. Install per manufacturers recommendation, including staples.



BMP-Install 8' wide Curlex I Excelsior Blanket, or equal, on prepared surface back of curb. Edge of blanket will be at back of curb. Install per manufacturers recommendation, including staples.

BACK OF CURB PROTECTION DETAIL

NOTES:

1. EXCELSIOR MAT TO BE INSTALLED WHEN SOD IS NOT SPECIFIED ON PROJECT.
2. EXCELSIOR BLANKET TO BE INSTALLED OVER SEED AND FERTILIZER AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
3. AFTER INSTALLATION OF EXCELSIOR BLANKET, AT LOCATIONS WHERE CONCENTRATED FLOW CARRIES SEDIMENT OVER THE CURB AND INTO THE GUTTER, SUPPLIMENTAL BMP'S WILL BE INSTALLED BY THE CONTRACTOR AS NEEDED, TO FIX THE PROBLEM.

THE CITY OF WICHITA

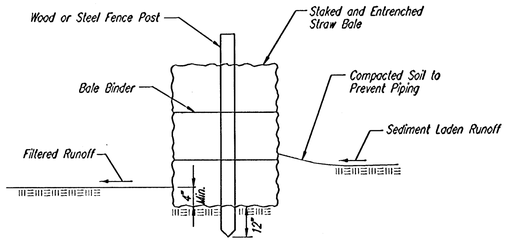
CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4114 FAX

SOIL EROSION BMPS STREET IMPROVEMENT PROJECTS

JAMES L. ARMOUR, P.E. – CITY ENGINEER

PROJECT NUMBER	INDEX CODE
472-83986	706889
DATE: MAR 96	SHEET 14 OF 26

DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\14-Soil Erosion BMP's 07-29-2005 10:16:45 am



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:

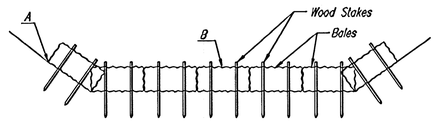
When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the 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 Check Spacing

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".

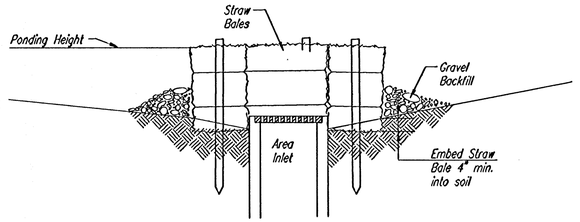
List of common placement/installation mistakes to avoid:

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 allow water to flow 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.

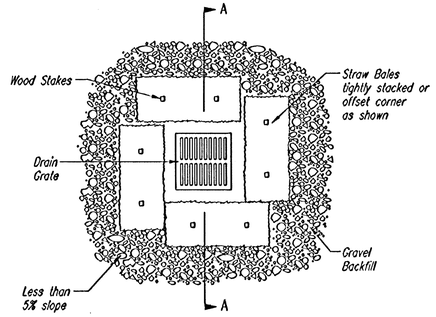
Inspection and Maintenance:

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.

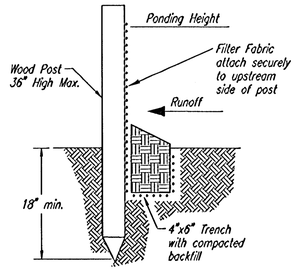
List of common placement installation mistakes to avoid:

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[

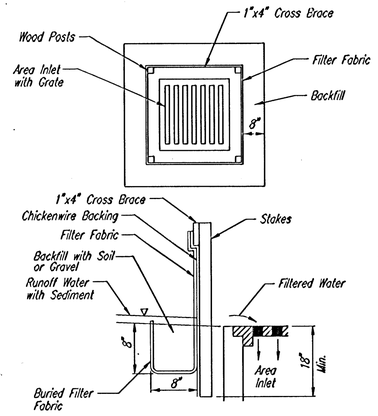
THE CITY OF WICHITA
CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4502
(316) 268-4114 FAX

SOIL EROSION BMP DETAILS

JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER	INDEX CODE
472-83986	706889
DATE: MAR 96	SHEET 15 OF 26

DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\15-Soil Erosion BMP's 07-29-2005 10:16:30 am



SILT FENCE BARRIERS FOR AREA INLETS
(INLET PROTECTION)

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification.
The wire or polymeric mesh backing used to help support the 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.
The material used to frame the tops of the posts should be 1" by 4" boards.
Silt fence fabric and support backing should be attached to the wooden posts and frame with staples, wire, zip ties, or nails.

Placement:

Place a silt fence drop inlet barrier in a location where it is unlikely to be overtopped.
Water should flow through silt fence, not over it. Silt fence barriers for area inlets often fail when repeatedly overtopped.
When used as a barrierfor area inlets, silt fence fabric and posts must be supported at the top by a wooden frame.
When a silt fence barrier for area inlets 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 8" deep by 8" wide.
Drive posts to a depth of at least 18" around the perimeter of the area inlet.
The distance between posts should be 4' or less. If the distance between two adjacent corner posts is more than 4', add another post(s) between them.
Connect the tops of all the posts with a wooden frame made of 1" by 4" boards. Use nails or screws for fastening.
Attach the wire or polymeric-mesh backing to the outside of the post/frame structure with staples, wire, zip ties, or nails.
Roll out a continuous length of silt fence fabric long enough to wrap around the perimeter of the area inlet. Add more length for overlapping the fabric joint. Place the edge of the fabric in the trench, starting at the outside edge of the trench. 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.
Attach the silt fence to the outside of the post/frame structure with staples, wire, zip ties, or nails. The joint should be overlapped to the next post.

Note: When a silt fence barrier for area inlet 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.

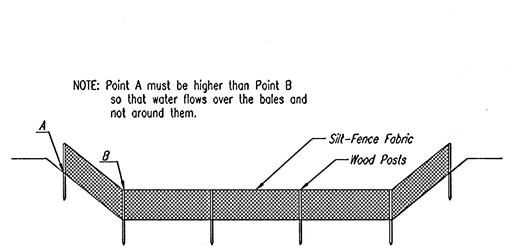
List of common placement/installation mistakes to avoid:

Water should flow through a silt fence barrier for area inlet-not over it. Place a silt fence barrier for area inlet in a location where it is unlikely to be overtopped. Silt fence barrier for area inlets often fail when repeatedly overtopped.
Do not place posts on the outside of the silt fence barrier for area inlet. In this configuration, the force of the water is not resisted by the posts, but only by the staples (wire, zip-ties, nails, etc.). The silt fence will rip and fail.
Do not install silt fence barrier for area inlets without framing the top of the posts.
The corner posts around area inlets are stressed in two directions whereas a normal silt fence is only stressed in one direction. This added stress requires more support.

Inspection and Maintenance:

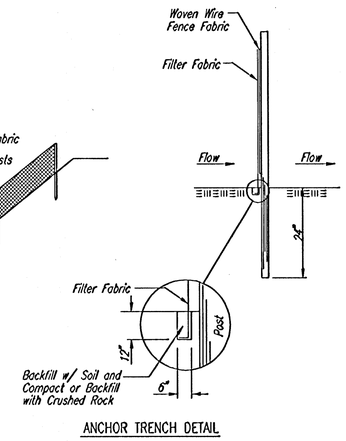
Silt fence barrier for area inlets should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

Does water flow under the silt fence[
Does the silt fence sag excessively[
Has the silt fence torn or become detached from the posts[
Does sediment need to be removed from behind the area inlet barrier[



ELEVATION

SILT FENCE DITCH CHECKS
(STREAM PROTECTION)



ANCHOR TRENCH DETAIL

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:

Place silt fence in ditches where it is unlikely that it will be overtopped.
Water should flow through a silt fence ditch check, not over it. Silt fence ditch checks often fail when overtopped.
Silt fence ditch checks should be placed perpendicular to the flowline of the ditch.
The silt fence should extend far enough so that the ground level at the ends of the fence is higher than the top of the low point of the fence. 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.
Silt fence 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 at least 12" deep by 6" 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 for later use.
Roll out a continuous length of silt fence fabric on the downstream side of the trench.
Place the edge of the fabric in the trench starting at the top upstream edge of the trench.
Line two sides of the trench with the fabric as shown on detail. 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 on the upstream side of the trench to clear an area for driving in the posts. Just downstream of the trench, drive posts into the ground to a depth of at least 24". Place posts no more than 4' apart.
Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

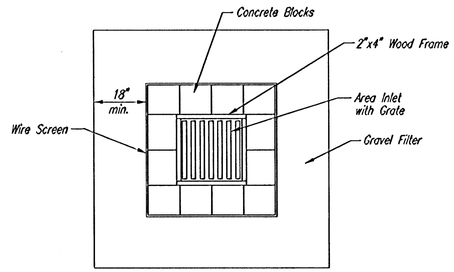
List of common placement/installation mistakes to avoid:

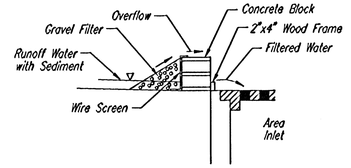
Water should flow through a silt fence ditch check-not over it. Place silt fence in ditches where it is unlikely that it will be overtopped. Silt fence installations quickly deteriorate when water overtops them.
Do not place silt fence posts on the upstream side of the silt fence fabric. In this configuration, 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 a silt fence ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow.
Do not place silt fence 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 allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the fence is higher than the low point on the top of the fence.
Do not place silt fence ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.

Inspection and Maintenance:

Silt fence 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 the silt fence sag excessively[
Has the silt fence torn or become detached from the posts[
Does sediment need to be removed from behind the ditch check[





CONCRETE BLOCK FILTER FOR AREA DRAIN
(INLET PROTECTION)

Gravel barriers provide little filtering of large inflow waters. However, when installed correctly and maintained, they can effectively treat low runoff flows.

Placement of gravel filters around area drains must be completed in a manner that will not cause local flooding.

Gravel filters can be used if the immediate and adjacent area to the area drain consists of soil or pavement.

Only gravel filters are to be installed on top of the pavement.

Instructions for Installing:

STEP 1: Place concrete blocks around the grate. The blocks can be stacked one or two high and should be supported by a 2"x4" board.
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 method is use of gravel bags that are supported to prevent collapsing.

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

Maintenance:

All gravel filters installed around area drains should be inspected and repaired after each runoff event. Sediment should be removed when material is within 3" of the top of any block. Periodically, the gravel should be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets after every runoff event.

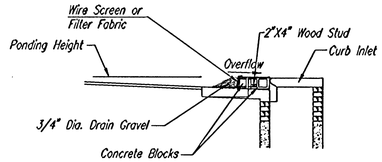
THE CITY OF WICHITA
CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4114 FAX

SOIL EROSION BMP DETAILS

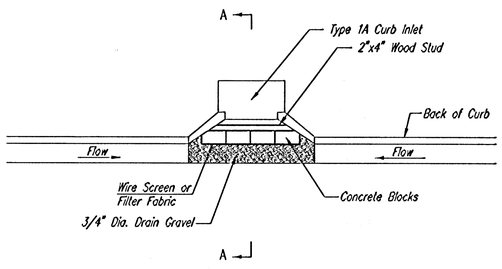
JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER	INDEX CODE
472-83986	706889
DATE: MAR 96	SHEET 16 OF 26

DSNR: BER OPER: REG SCALE: 1:1.00
I:\2004\0421\DWG's 07-28-05\16-Soil Erosion BMP's 07-29-2005 10:16:15 am



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.

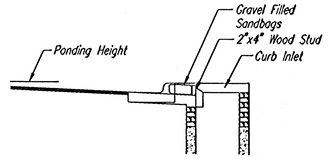
Instructions for Installing:

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.

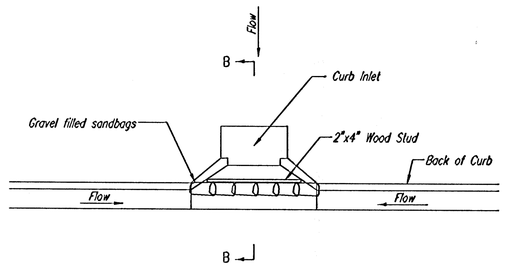
Use of rock with diameters smaller than 1" in the bag may result in clogging of pores and reduce the amount of water flowing into an inlet.

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 roads and streets.



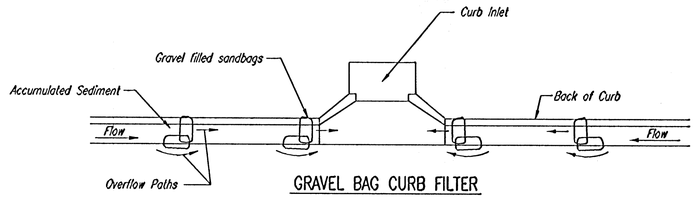
SECTION B-B



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:

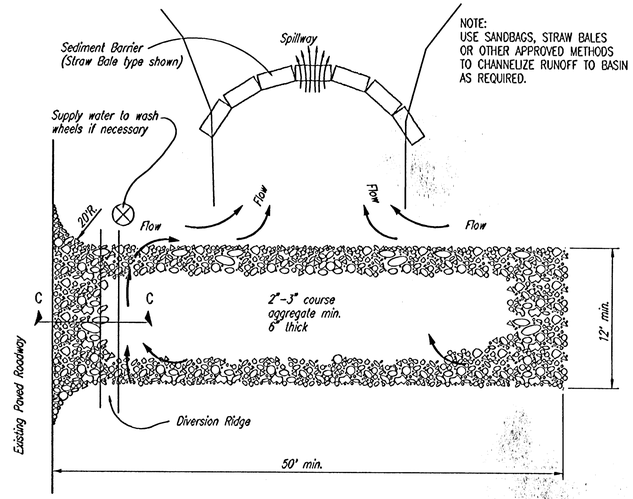
Gravel bags are to be placed according to street grades using the following table or graph that appears below.

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 STABLIZED 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.

THE CITY OF WICHITA
CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4114 FAX

SOIL EROSION BMP DETAILS

JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER	INDEX CODE
472-83986	706389
DATE: MAR 96	SHEET 17 OF 26

DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\17-Soil Erosion BMP's 07-29-2005 10:15:58 am

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2004	18	26

CONTROLLER DESCRIPTION

The Traffic Signal Controller shall comply with the requirements defined in the Specifications for a Type 170E Controller with 412B prom module and a 400 stand alone modem. It shall be furnished and installed with a Model 332 cabinet, 4-type 242 isolator units, 8-type c800 detector units, 8 switch packs, 2-type 204 flashers, 4 flash transfer relays, and a Model 210P conflict monitor MS or ECL. The Controller shall also be furnished with WAIKS Version 48A or latest version of software developed by WAPITI MICRO SYSTEMS.

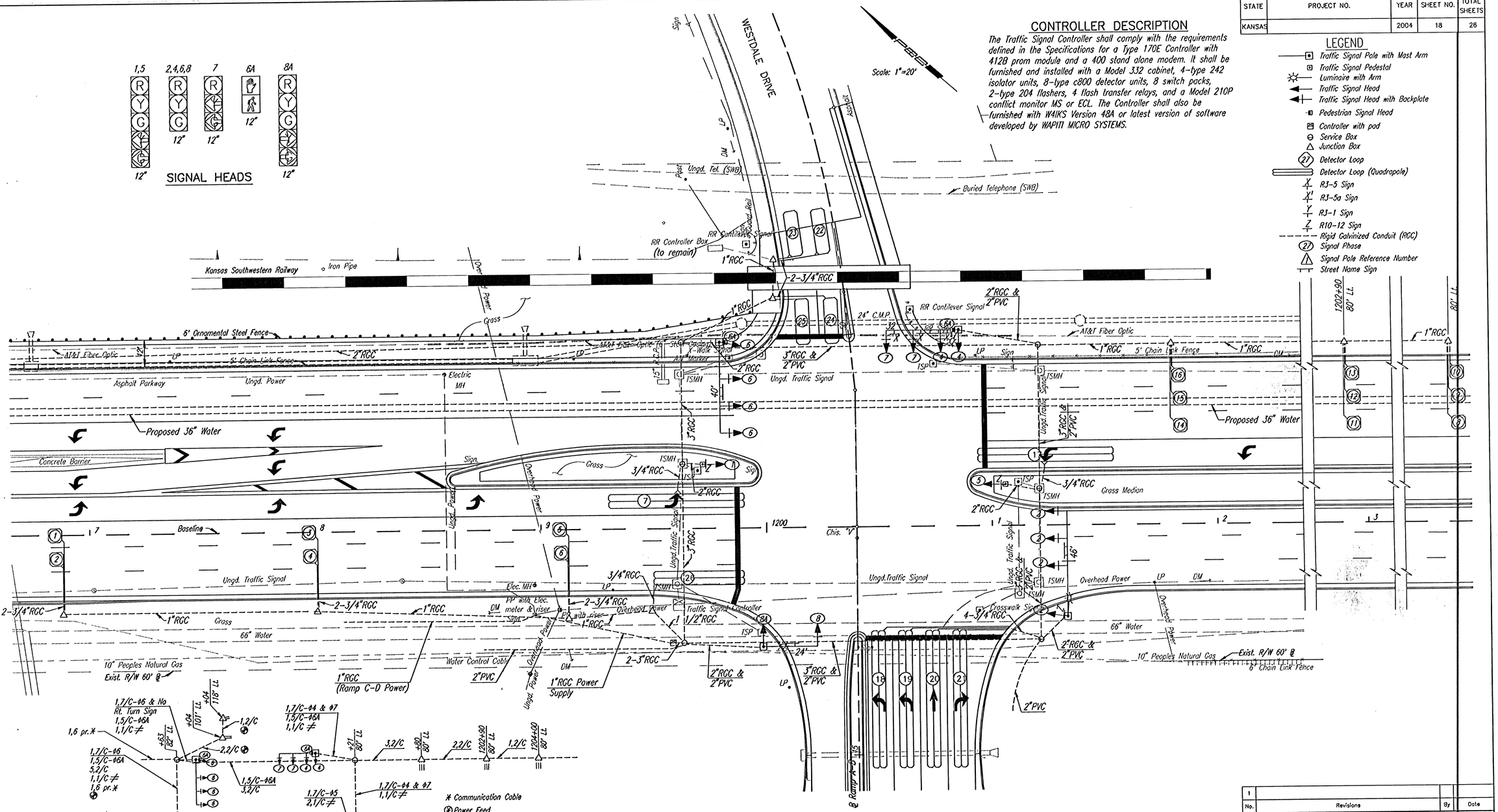
LEGEND

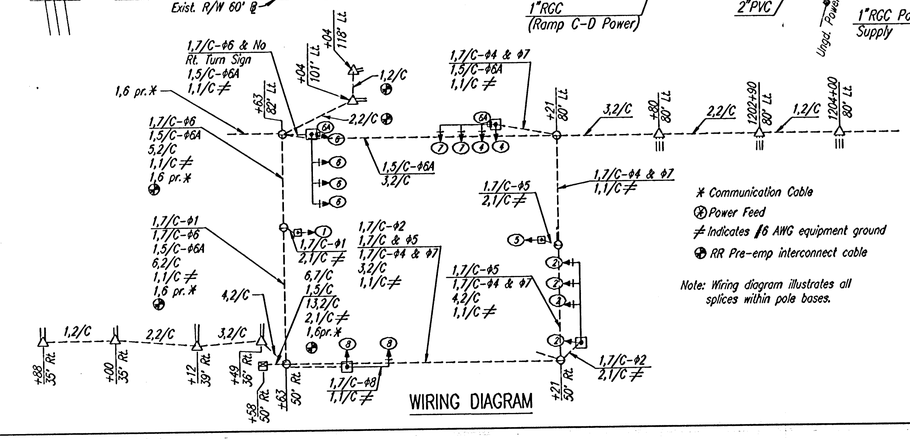
- Traffic Signal Pole with Mast Arm
- Traffic Signal Pedestal
- Luminaire with Arm
- Traffic Signal Head
- Traffic Signal Head with Backplate
- Pedestrian Signal Head
- Controller with pad
- Service Box
- Junction Box
- (27) Detector Loop
- Detector Loop (Quadrapole)
- R3-5 Sign
- R3-5a Sign
- R3-1 Sign
- R10-12 Sign
- Rigid Galvinized Conduit (RGC)
- (27) Signal Phase
- Signal Pole Reference Number
- Street Name Sign

1,5 R Y G 12" | 2,4,6,8 R Y G 12" | 7 R 12" | 6A 12" | 8A R Y G 12"

SIGNAL HEADS

Scale: 1"=20'





WIRING DIAGRAM

* Communication Cable
Ⓟ Power Feed
≠ Indicates #8 AWG equipment ground
Ⓟ RR Pre-emp interconnect cable

Note: Wiring diagram illustrates all splices within pole bases.

No.	Revisions	By	Date
1			

TRAFFIC SIGNAL PLAN
ZOO BLVD. & I-235 RAMPS A-B
(EXISTING)

Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	BER	Checked by	BER	
Drawn by	SDM	Date	Oct., 2004	Job No. 04213

BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

DSNR: BER OPER: REL SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\18-Existing Traffic Signal Plan 07-29-2005 10:15:44 am

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2004	19	26

DETECTOR SUMMARY

CAMERA NO.	DETECTION ZONE	MODE	SIZE (LxW)	PHASE CALLED	PHASE EXTENDED	DELAY/ STRETCH TIMER	INITIAL SETTING (SEC.)
1	08-1	PRESENCE	20 x 6	8	8	–	–
1	08-2	PRESENCE	20 x 6	8	8	–	–
1	08-3	PRESENCE	20 x 6	8	8	–	–
1	08-4	PRESENCE	20 x 6	8	8	–	–
2	01-1	PRESENCE	60 x 6	1	1	–	–
2	06-1	PULSE	6 x 6	6	6	S	1
2	06-2	PULSE	6 x 6	6	6	S	1
2	06-3	PULSE	6 x 6	6	6	S	1
2	06-4	PULSE	6 x 6	6	6	S	1
2	06-5	PULSE	6 x 6	6	6	S	1
2	06-6	PULSE	6 x 6	6	6	S	1
2	06-7	PULSE	6 x 6	6	6	S	1
2	06-8	PULSE	6 x 6	6	6	S	1
2	06-9	PULSE	6 x 6	6	6	S	1
2	06-10	PULSE	6 x 6	6	6	S	1
2	06-11	PULSE	6 x 6	6	6	S	1
2	06-12	PULSE	6 x 6	6	6	S	1
3	07-1	PRESENCE	60 x 6	7	7	–	–
3	07-2	PRESENCE	60 x 6	7	7	–	–
3	04-1	PRESENCE	60 x 6	4	4	–	–
3	04-2	PRESENCE	60 x 6	4	4	–	–
4	05-1	PRESENCE	60 x 6	5	5	–	–
4	02-1	PRESENCE	60 x 6	2	2	–	–
4	02-2	PULSE	6 x 6	2	2	S	1
4	02-3	PULSE	6 x 6	2	2	S	1
4	02-4	PULSE	6 x 6	2	2	S	1
4	02-5	PULSE	6 x 6	2	2	S	1
4	02-6	PULSE	6 x 6	2	2	S	1
4	02-7	PULSE	6 x 6	2	2	S	1

PHASE TIMING

FUNCTION	PHASE							
	1	2	3	4	5	6	7	8
MAX. I	30.0	80.0	—	50.0	—	80.0	50.0	—
MAX. II/HFDW	—	—	—	—	—	—	—	—
WALK	—	—	—	—	—	10.0	—	—
FLASH DW	—	—	—	—	—	11.0	—	—
MAX. INITIAL	5.0	10.0	—	5.0	—	10.0	5.0	—
MIN. GREEN	5.0	10.0	—	5.0	—	10.0	5.0	—
T B R	30.0	80.0	—	50.0	—	80.0	50.0	—
T T R	0.0	0.0	—	0.0	—	0.0	0.0	—
OBSERVE GAP	—	—	—	—	—	—	—	—
PASSAGE	2.0	2.0	—	2.0	—	2.0	2.0	—
MIN. GAP	2.0	2.0	—	2.0	—	2.0	2.0	—
ADDED ACTUATION	1.0	2.1	—	1.0	—	2.1	1.0	—
YELLOW	3.0	3.0	—	3.0	—	3.0	3.0	—
RED CLEAR	1.0	1.8	—	2.0	—	1.8	2.0	—
RED REVERT	—	—	—	—	—	—	—	—
WALK II	—	—	—	—	—	—	—	—

SIGNAL HEADS

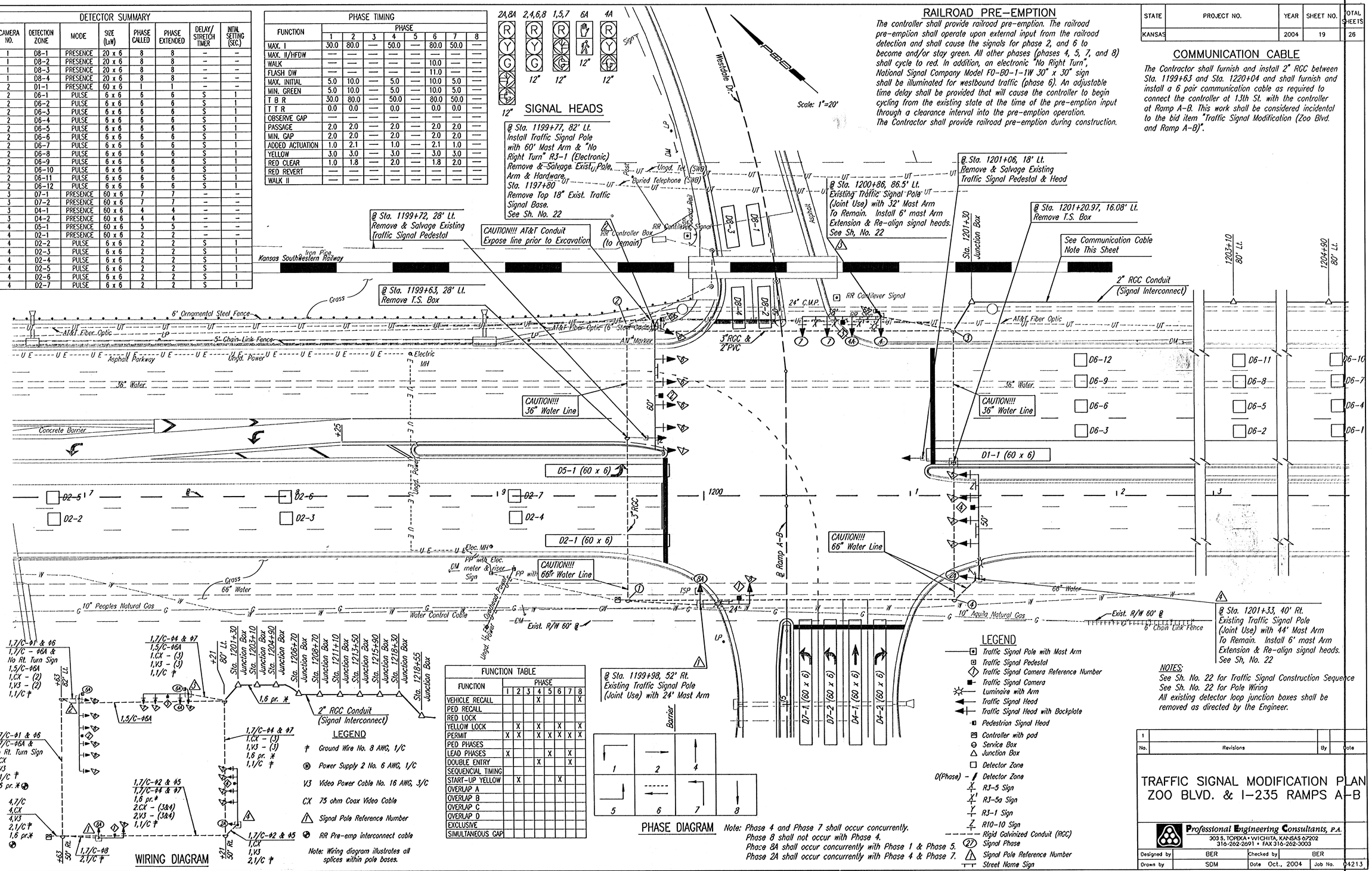
@ Sta. 1199+77, 82' Lt.
Install Traffic Signal Pole with 60' Mast Arm & "No Right Turn" R3-1 (Electronic)
Remove & Salvage Exist. Pole, Arm & Hardware
Sta. 1197+80
Remove Top 18" Exist. Traffic Signal Base.
See Sh. No. 22

RAILROAD PRE-EMPTION

The controller shall provide railroad pre-emption. The railroad pre-emption shall operate upon external input from the railroad detection and shall cause the signals for phase 2, and 6 to become and/or stay green. All other phases (phases 4, 5, 7, and 8) shall cycle to red. In addition, an electronic "No Right Turn", National Signal Company Model FO-BO-1-1W 30" x 30" sign shall be illuminated for westbound traffic (phase 6). An adjustable time delay shall be provided that will cause the controller to begin cycling from the existing state at the time of the pre-emption input through a clearance interval into the pre-emption operation. The Contractor shall provide railroad pre-emption during construction.

COMMUNICATION CABLE

The Contractor shall furnish and install 2" RGC between Sta. 1199+63 and Sta. 1220+04 and shall furnish and install a 6 pair communication cable as required to connect the controller at 13th St. with the controller at Ramp A-B. This work shall be considered incidental to the bid item "Traffic Signal Modification (Zoo Blvd. and Ramp A-B)".



WIRING DIAGRAM

LEGEND

† Ground Wire No. 8 AWG, 1/C
Power Supply 2 No. 6 AWG, 1/C
V3 Video Power Cable No. 16 AWG, 3/C
CX 75 ohm Coax Video Cable
Signal Pole Reference Number
RR Pre-emp interconnect cable

Note: Wiring diagram illustrates all splices within pole bases.

FUNCTION TABLE

FUNCTION	PHASE							
	1	2	3	4	5	6	7	8
VEHICLE RECALL				X				X
PED RECALL								
RED LOCK								
YELLOW LOCK		X		X		X		X
PERMIT	X	X		X	X	X	X	X
PED PHASES								
LEAD PHASES	X				X		X	
DOUBLE ENTRY				X			X	
SEQUENCIAL TIMING								
START-UP YELLOW		X				X		
OVERLAP A								
OVERLAP B								
OVERLAP C								
OVERLAP D								
EXCLUSIVE								
SIMULTANEOUS GAP								

PHASE DIAGRAM

Note: Phase 4 and Phase 7 shall occur concurrently.
Phase 8 shall not occur with Phase 4.
Phase 8A shall occur concurrently with Phase 1 & Phase 5.
Phase 2A shall occur concurrently with Phase 4 & Phase 7.

LEGEND

- Traffic Signal Pole with Mast Arm
- Traffic Signal Pedestal
- Traffic Signal Camera Reference Number
- Traffic Signal Camera
- Luminaire with Arm
- Traffic Signal Head
- Traffic Signal Head with Backplate
- Pedestrian Signal Head
- Controller with pad
- Service Box
- Junction Box
- Detector Zone
- D(Phase) – Detector Zone
- R3-5 Sign
- R3-5a Sign
- R3-1 Sign
- R10-10 Sign
- Rigid Galvinized Conduit (RGC)
- (27) Signal Phase
- Signal Pole Reference Number
- Street Name Sign

NOTES:
See Sh. No. 22 for Traffic Signal Construction Sequence
See Sh. No. 22 for Pole Wiring
All existing detector loop junction boxes shall be removed as directed by the Engineer.

No.	Revisions	By	Date
1			

TRAFFIC SIGNAL MODIFICATION PLAN ZOO BLVD. & I-235 RAMPS A-B

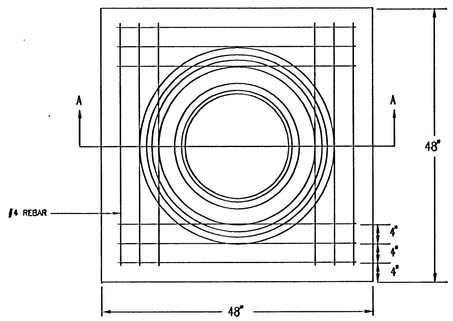
Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	BER	Checked by	BER
Drawn by	SDM	Date	Oct., 2004
		Job No.	04213

BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

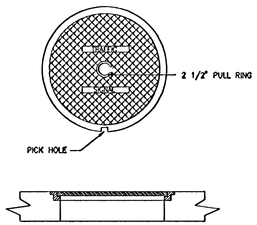
DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\19-Traffic Signal Modification Plan 07-29-2005 12:49:28 am

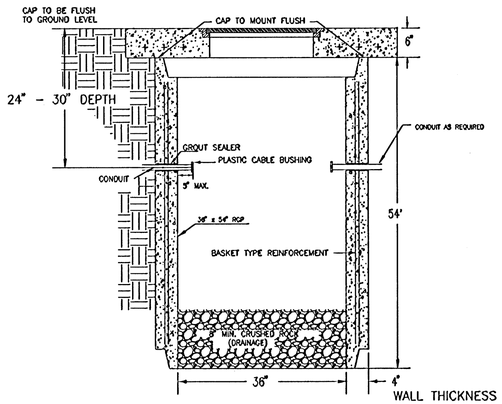
SERVICE BOX CONSTRUCTION/INSTALLATION DETAILS



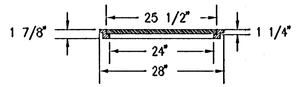
PRE-CAST CONCRETE
SERVICE BOX

(36" I.D. X 54" RCP)
with 6" CAP



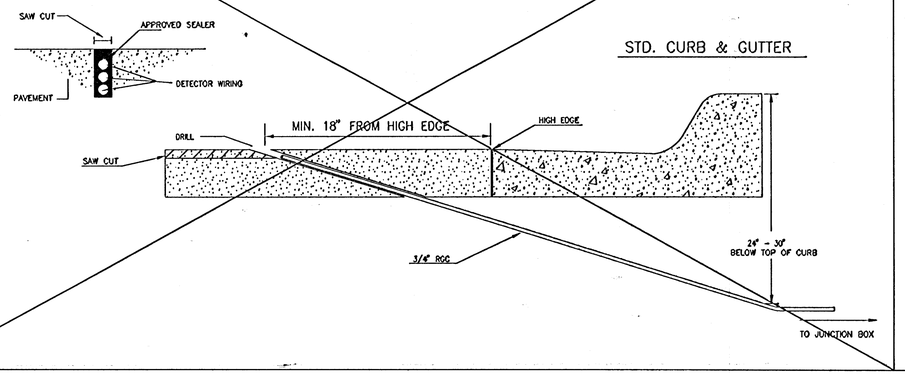


SECTION A-A



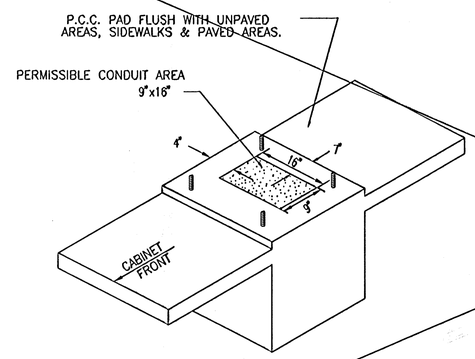
RING & COVER DETAIL

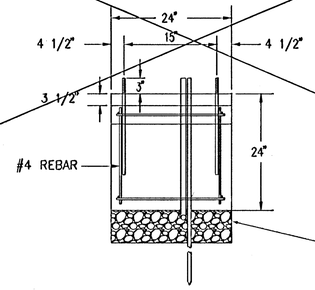
CONDUIT/DETECTOR WIRE INSTALLATION DETAILS

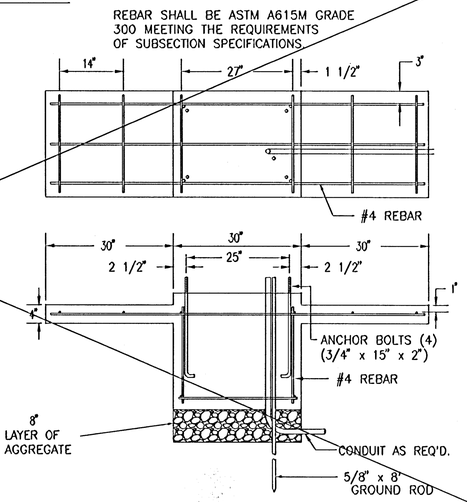


STD. CURB & GUTTER

170 CONTROLLER PAD DETAILS

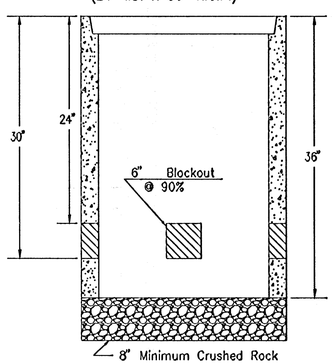




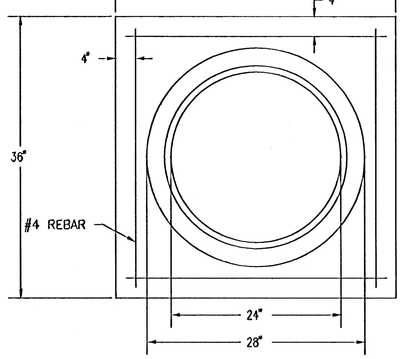


JUNCTION BOX DETAILS

PRE-FAB Junction Box
(24" I.D. X 36" R.C.P.)

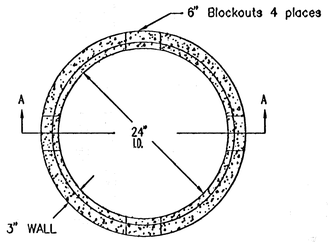


SECTION A-A



JUNCTION BOX CAP

36" x 36" x 6"
TOP OF CAP TO BE FLUSH WITH
GROUND LEVEL.



"SEE SERVICE BOX INSTALLATION
FOR RING & COVER DETAILS.

NOTES:

SERVICE & JUNCTION BOX:

1. CONDUIT CONNECTION TO BE FLUSH TO WITHIN 5" OF INSIDE FACE OF SIDE WALL, CONDUIT TO DRAIN INTO SERVICE BOX.
2. CONDUIT CONNECTIONS TO SERVICE BOX SHALL BE TERMINATED WITH PLASTIC CABLE BUSHING.
3. CONDUIT SHALL BE SEALED WITH APPROVED SEALER AT INSIDE WALL FACE.
4. ALL SERVICE & JUNCTION BOXES TO HAVE 8" OF CRUSHED ROCK.

TRENCHING:

1. DEPTH TO BE 30" MINIMUM WITH ROCK & STUBBLE FREE BACKFILL TO SERVE AS BEDDING MATERIAL. MAINTAIN MINIMUM CONDUIT DEPTH IN TRENCH.
2. BACKFILL TO BE COMPACTED IN 6" LOOSE LIFTS BY HAND OR MECHANICAL TAMPING TO A 95% STANDARD DENSITY.

CONDUIT:

1. SLOPE CONDUIT TO DRAIN AS DIRECTED BY THE ENGINEER.
2. 3" RIGID STEEL CONDUIT BTWN. SERVICE BOXES.
   1 1/4" " " " BTWN. SERVICE & JUNCTION BOXES.
   3/4" " " " BTWN. JUNCTION BOXES.
   3/4" " " " BTWN. JUNCTION BOX & DETECTOR LOOP SAW CUT

REV.	DATE	COMMENTS	INT

THE CITY OF WICHITA

CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4116 FAX

CENTRAL PARK AND MAIZE ROAD

SERVICE/JUNCTION BOX, CONTROLLER PAD CONSTRUCTION/INSTALLATION DETAILS

PROJECT NUMBER
472-83957

DRAWN BY: T.M.	SCALE	REVISED BY:
DATE: MAY 97	NO SCALE	DATE:

CITY OF WICHITA
DEPARTMENT OF PUBLIC WORKS

DIVISION OF TRAFFIC ENGINEERING
PAUL D. GUNZELMAN, P.E. - TRAFFIC ENGINEER

SHEET 20 OF 26

DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\20-Traffic Signal Details 07-29-2005 11:45:19 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	3	26

P.O.T. ℄ W. Bd. Sta. 1200+39.96=
P.I. ℄ Westdale Sta. 50+24.97

Scale: 1"=20'

Note:
Directional bore 2"RGC conduit as needed under pavement and landscaping. Contractor is responsible for damage to existing trees, fence and sidewalk.

STA. 1198+60 BEGIN CONSTRUCTION

Sta. 1198+60 to Sta. 1200+10
Remove Median Curb & Gutter and adjacent pavement as shown. Place Concrete Pavement (9") and Combined Curb & Gutter (Type III) with Concrete Pavers (Full Width).

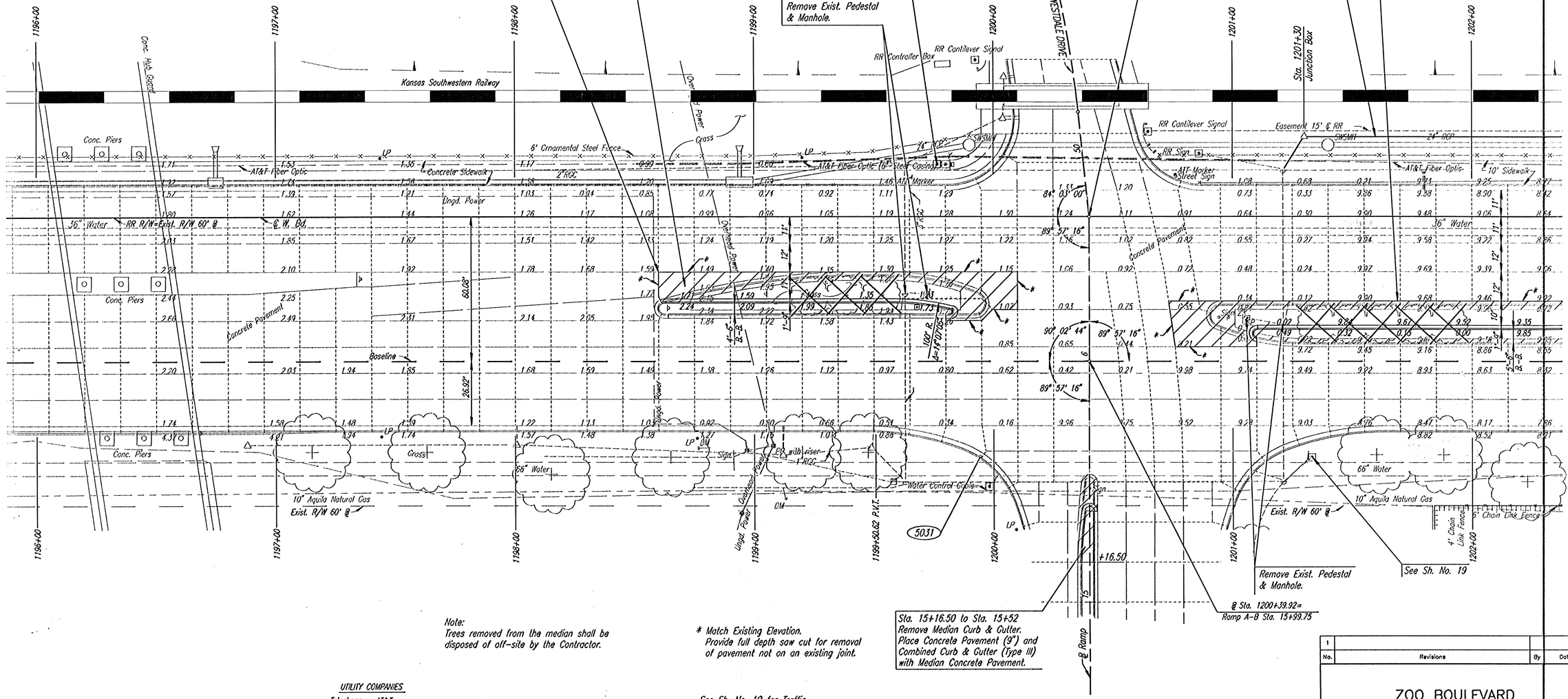
Remove Exist. Pedestal & Manhole.

See Sh. No. 19

℄ W. Bd. Sta. 1200+39.96=
℄ Westdale Sta. 50+24.97

2" RGC Conduit (Signal Interconnect)

Sta. 1200+75 to Sta. 1204+85
Remove Median Curb & Gutter and adjacent pavement as shown. Place Concrete Pavement (9") and Combined Curb & Gutter (Type III) with Concrete Pavers (Full Width).



Note:
Trees removed from the median shall be disposed of off-site by the Contractor.

* Match Existing Elevation.
Provide full depth saw cut for removal of pavement not on an existing joint.

Sta. 15+16.50 to Sta. 15+52
Remove Median Curb & Gutter.
Place Concrete Pavement (9") and Combined Curb & Gutter (Type III) with Median Concrete Pavement.

See Sh. No. 19 for Traffic Signal Modifications

UTILITY COMPANIES

Telephone	AT&T
Gas	Aquila
Water	City of Wichita
Electric	Westar

N-1695154.3430, E-1630827.6330
Control Point No. 5031
39.83' Rt. Sta. 1199+94.30
1. 1/2" Rebar at point
2. COW manhole 37.53' NNW
3. NE end median 46.80' SE
4. NW bolt on Traffic Signal Pole 7.24' SSW
5. Back curb west return N. Bd. ramps 6.25' E

P.O.T. ℄ Sta. 1200+39.92=
P.O.T. Ramp Sta. 15+99.75=
P.O.T. Westdale Sta. 50+85.05

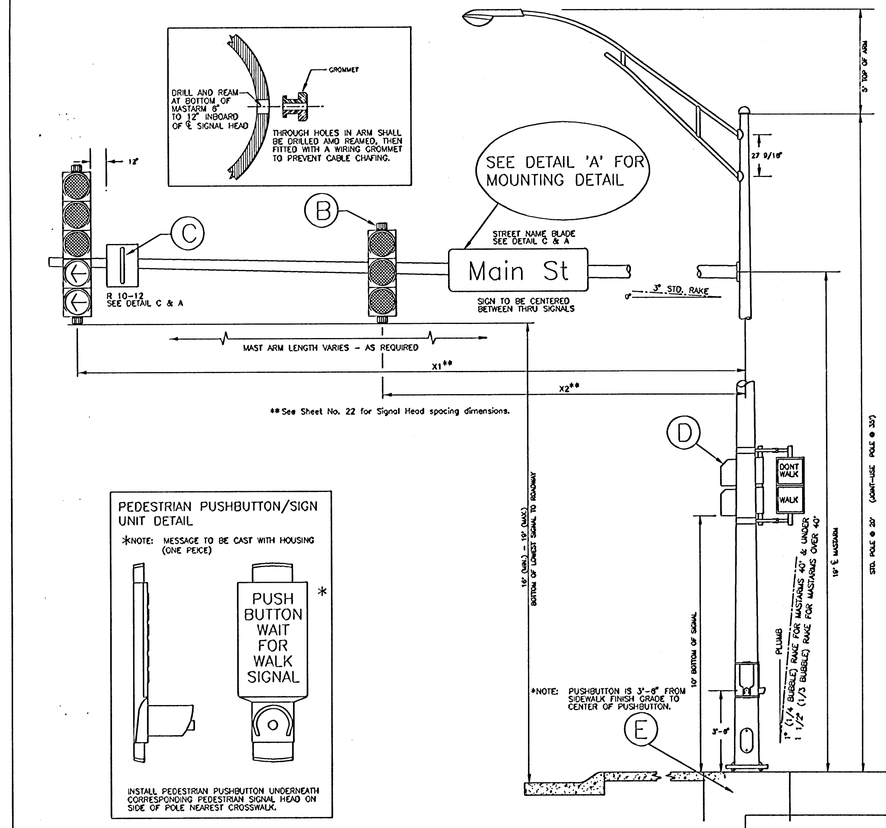
No.	Revisions	By	Date
1			

ZOO BOULEVARD
STA. 1196+00 TO STA. 1202+25

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004
		Job No.	04213

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\03-Plan 1196 07-29-2005 02:44:45 pm

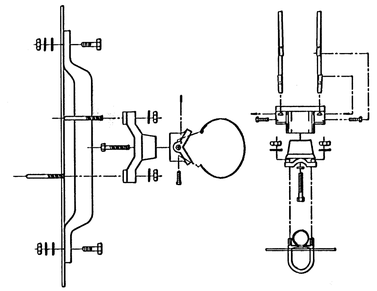


PEDESTRIAN PUSHBUTTON/SIGN UNIT DETAIL

*NOTE: MESSAGE TO BE CAST WITH HOUSING (ONE PIECE)

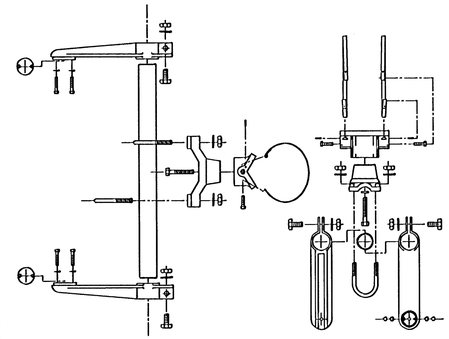
INSTALL PEDESTRIAN PUSHBUTTON UNDERNEATH CORRESPONDING PEDESTRIAN SIGNAL HEAD ON SIDE OF POLE NEAREST CROSSWALK.

BANDED SIGN MOUNTING BRACKET DETAIL



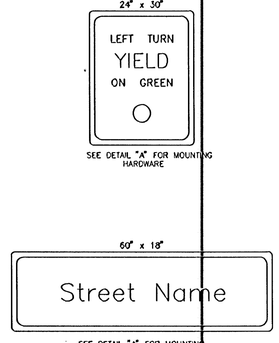
A

TYPE I SIGNAL MOUNTING BRACKET ASSEMBLY DETAIL



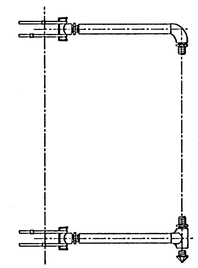
B

STANDARD SIGNING



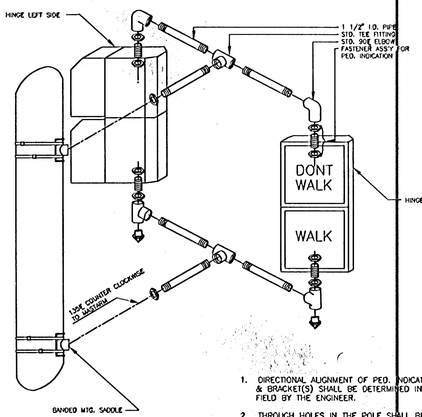
C

TYPE III SIDE-OF-POLE MOUNTING BRACKET ASSEMBLY



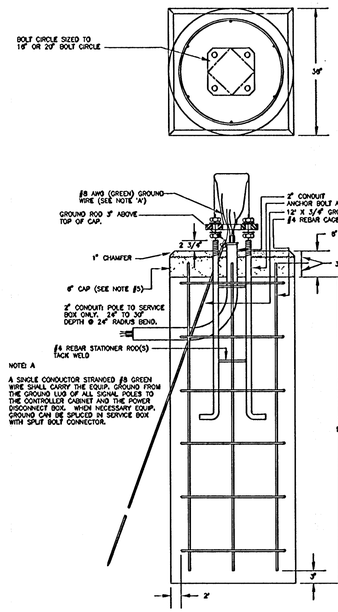
F

TYPE II SIGNAL MOUNTING BRACKET ASSEMBLY (SIDE-OF-POLE)



1. DIRECTIONAL ALIGNMENT OF PED. INDICATIONS & BRACKET(S) SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. THROUGH HOLES IN THE POLE SHALL BE DRILLED AND WELL REAMED TO PREVENT CABLE CHAFING.
3. HINGE PEDESTRIAN SIGNAL DOORS AWAY FROM POLE.

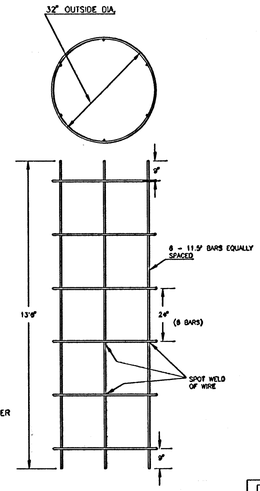
D



NOTE A

A SINGLE CONDUCTOR STRANDED #8 GREEN WIRE SHALL CARRY THE EQUIP. GROUND FROM THE GROUND LUG OF ALL SIGNAL POLES TO THE CONTROLLER CABINET AND THE POWER DISCONNECT BOX. WHICH NECESSARY EQUIP. GROUND CAN BE SPLICED IN SERVICE BOX WITH SPLIT BOLT CONNECTOR.

REBAR CAGE



NOTE:

1. THE ANCHOR BOLTS FOR THE SIGNAL POLE SHALL BE TACK WELDED TOGETHER IN A 18" OR 20" DIA. BOLT PATTERN (ON CENTERS AS SHOWN) TO MAINTAIN REQUIRED BOLT CONFIGURATION PATTERN AND TO AID IN VERTICAL POSITIONING WHILE CONCRETE BASE IS POURED.
2. USE ANTI-SEIZE COMPOUND ON ALL THREADS.
3. 12' x 3/4" GROUND ROD TO BE POSITIONED BEFORE POURING BASE.
4. CLASS 'A' CONCRETE SHALL BE USED TO CONSTRUCT BASE.
5. CONSTRUCT A 6" THICK x 36" SQUARE CONCRETE CAP AFTER POLE HAS BEEN ERECTED & PLUMBED. CHAMFER EDGE 1". MUST BE APPROVED BY ENG. BEFORE POURED.
6. CONDUIT SHALL HAVE PLASTIC (OR METAL) BUSHING (ABOVE BASE) TO PREVENT CABLE CHAFING.
7. USE #8 BARE COPPER GROUND CONDUCTOR FROM CLAMP TO GROUND BOLT IN ACCESS HOLE.

E

CITY OF WICHITA

PROJECT DESCRIPTION
STEEL SIGNAL POLE ASSEMBLY DETAILS

PROJECT NUMBER

DRAWN BY: T.M.	SCALE: NO SCALE	REVISED BY:
DATE: MAY 97		DATE:

CITY OF WICHITA
DEPARTMENT OF PUBLIC WORKS

DIVISION OF TRAFFIC ENGINEERING
PAUL D. GUNZELMAN, P.E. - TRAFFIC ENGINEER

SHEET 21 OF 26

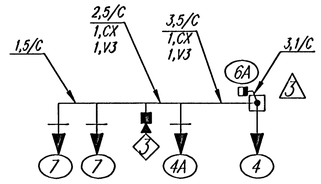
DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\21-Steel Signal Pole Assy Details 07-29-2005 11:45:52 am

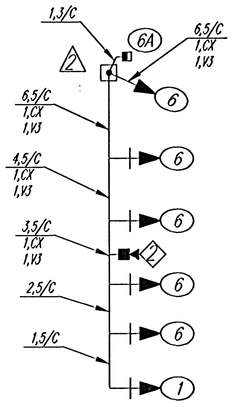
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2004	22	26

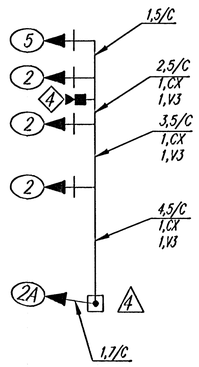
TRAFFIC SIGNAL POLE SUMMARY

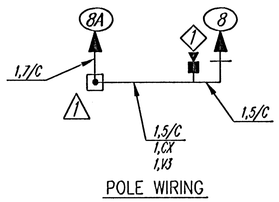
POLE NO.	TYPE ①	ARM LENGTH	NO.OF SIGNALS ON ARM	BRACKET TYPE	X1	X2	X3	X4	X5	NO.OF SIGNALS ON POLE	BRACKET TYPE	NO.OF PUSH BUTTONS ON POLE	REMARKS
2	A	60'	5	I	60'	49'	38'	27'	16'	2	II	1	
4	B	50'	4	I	50'	39'	28'	17'		1	II	–	6' Mast Arm Extension Only
3	B	38'	3	I	38'	30'	22'			2	II	1	6' Mast Arm Extension Only

① A-20' Steel with Mast Arm(s)
B-40' Steel with Mast Arm









POLE WIRING

JUNCTION BOX (PRE-FAB) SUMMARY

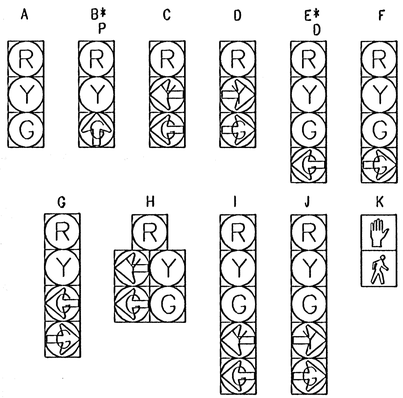
STATION	SIDE
1201+30	LL
1203+10	LL
1204+90	LL
1206+70	LL
1208+70	LL
1211+10	LL
1213+50	LL
1215+90	LL
1218+30	LL
1218+55	LL

SUMMARY OF TRAFFIC SIGNAL HEADS

NUMBER	TYPE	SIZE	QUANTITY
1	C	12"	1
2	A	12"	3
2A	J	12"	1
4	A	12"	1
4A	B	12"	1
5	C	12"	1
6	A	12"	5
7	C	12"	2
8	A	12"	1
8A	J	12"	1
6A	K	12"	2
TOTAL			19

RECAPITULATION OF TRAFFIC SIGNAL QUANTITIES

ITEM	UNIT	QUANTITY
TRAFFIC SIGNAL MODIFICATIONS (Zoo Blvd & I-235 Ramp A-B)	LUMP SUM	LUMP SUM



* SUBSCRIPT "P" INDICATES PROGRAMMED SIGNALS
SUBSCRIPT "D" INDICATES DUAL-MODE GREEN/YELLOW ARROW SECTION

BILL OF MATERIALS

ITEM	UNIT	QUANTITY
PAD MOUNTED CONTROLLER & CABINENT	EACH	–
TRAFFIC SIGNAL HEAD MOUNTING HARDWARE	EACH	3
TRAFFIC SIGNAL POLE STEEL (20') W/ MAST ARM	EACH	1
TRAFFIC SIGNAL POLE (JOINT USE) STEEL (35')	EACH	–
TRAFFIC SIGNAL MAST ARM EXTENSION (6')	EACH	2
CONCRETE CONTROLLER PAD	EACH	–
CONCRETE FOOTING – PEDESTAL	EACH	–
CONCRETE FOOTING (14') – POLE	EACH	1
CONDUIT ELBOW 90¶ 2"	EACH	AS REQ'D
CONDUIT ELBOW 90¶ 3"	EACH	AS REQ'D
BACK PLATE 5" 3 SECTION	EACH	13
BACK PLATE 5" 5 SECTION	EACH	–
TERMINAL BLOCK	EACH	–
SERVICE BOX	EACH	–
JUNCTION BOX (PRE-FAB)	EACH	10
GROUND ROD & CLAMP	EACH	1
TRAFFIC SIGNAL LAMP 135 WATT	EACH	–
LED TRAFFIC SIGNAL HEAD (12")	EACH	19
ENTRANCE HEAD	EACH	–
CIRCUIT BREAKER & BOX 50 AMP.	EACH	–
SURGE ARRESTOR – A.C.SERVICE	EACH	–
SURGE ARRESTOR – DETECTOR	EACH	–
PEDESTRIAN PUSHBUTTON W/SIGN	EACH	–
6 PR. COMMUNICATION CABLE	LIN.FT.	2,500
DETECTOR LOOP WIRE NO. 14 AWG 1/c	LIN.FT.	–
LEAD-IN WIRE NO.6 AWG 1/c	LIN.FT.	–
MULTI-CONDUCTOR CABLE NO.14 AWG 7/c	LIN.FT.	1,000
MULTI-CONDUCTOR CABLE NO.14 AWG 5/c	LIN.FT.	500
MULTI-CONDUCTOR CABLE NO.14 AWG 3/c	LIN.FT.	20
SHEILDED DETECTOR LEAD-IN NO.14 AWG 2/c	LIN.FT.	–
CONDUIT 3/4"(RGC)	LIN.FT.	–
CONDUIT 1"(RGC)	LIN.FT.	–
CONDUIT 2"(PVC)	LIN.FT.	–
CONDUIT 2"(RGC)	LIN.FT.	1,825
CONDUIT 3"(RGC)	LIN.FT.	200
#8 AWG GROUND (GREEN)	LIN.FT.	500
STREET NAME SIGN – REMOVE & RESET ONLY	EACH	1
VIDEO DETECTION CAMERA (VANTAGE OZ2), MOUNTING HARDWARE	EACH	4
VIDEO DETECTION UNIT (VANTAGE EDGE MODULE)	EACH	4
VIDEO POWER CABLE #16 A.W.G. 3/C	LIN.FT.	1000
VIDEO CABLE 75 OHM COAXIAL (BELDON #8281 OR APPROVED EQUAL)	LIN.FT.	1000
TV MONITOR	EACH	1
ITERIS LENS ADJUSTMENT UNIT	EACH	–

–QUANTITIES FOR INFORMATION ONLY–

TRAFFIC SIGNAL CONSTRUCTION SEQUENCE

Except as noted below, the contractor shall maintain uninterrupted actuated signal operation during construction. Signal operation shall include provisions for railroad pre-emption, electronic turn sign operation, and either loop detection or video camera detection for all permitted movements. Interruption of traffic signal interconnect capability is permitted.

At the contractors option he may install new conduits between service boxes 1 and 2, and 3 and 4, using directional boring methods, and install new conductors prior to removal of existing conductors to poles 2 and 3; or he may opt to install one conduit run between either service boxes 1 and 2 , or 3 and 4, and install temporary conductor as necessary to maintain traffic signal operation, prior to removal of existing conductors.

Regardless of option, the following sequence shall be followed or altered only with the approval of the engineer:

1. *Install conduit as required to facilitate continuous signal operation during construction.*
2. *Install mast arm extension at pole no. 3 & 4. During this operation, traffic control measures to flag traffic shall be employed. This work shall be accomplished during an off-peak period as defined by the engineer.*
3. *Remove existing pedestal for movement no. 5 and median service box.*
4. *Install new pole no. 2 and mast arm. Signal indication for movement no. 1 shall be functional on the pole no. 2 mast arm prior to removal of the median pedestal and existing mast arm. Traffic control measures to flag traffic shall be employed, this work shall be accomplished during an off-peak period as defined by the engineer.*

The existing wiring diagram is presented for information only and should be verified by the contractor prior to construction.

Top Coat Finish for Traffic Signal Poles

All visually exposed exterior surfaces shall be coated with a urethane or triglycidyl isocyanurate (TGIC) polyester powder to a minimum dry film thickness (DFT) of 2.0 mils. Prior to application of the top coat, the surface shall be mechanically etched and pre-heated to 450 degrees F for a minimum of one hour. The coating shall be electro-statically applied and cured at a minimum temperature of 400 degrees F. The finished color for the poles shall be black and approved by the Engineer prior to application on the basis of color chip submittals.

Special Finish for Traffic Signal Equipment

The traffic signal controller cabinet, mounting brackets, signal head backs, sign backs, meter box, disconnect box, and miscellaneous hardware shall be shop painted with an aerosol lacquer cellulose ester to match the traffic signal pole color. The Contractor shall submit two copies of the proposed coating system to the Engineer for approval prior to application. In addition to the requirements stipulated in the Standard Specifications, banding material shall be coated with ethylene-vinly-alcohol (EVA) copolymer. The color shall be black.

NOTES:

The contractor shall supply and install all necessary materials and equipment for the complete installation and operation of the traffic signal system whether specifically mentioned or not.

Contractor to remove and salvage existing traffic signal heads and deliver to CMF along with all other materials and equipment shown to be salvaged and not reused on this project.

The traffic signal system shall be complete and the contractor shall furnish and install all equipment and materials necessary to complete operation of the traffic signal system whether specifically mentioned or not.

No.	Revisions	By	Date
1			

BILL OF MATERIALS

Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	BER	Checked by	BER	
Drawn by	SDM	Date	Oct., 2004	Job No. 04213

REFERENCES CHECKED

DSNR: BER OPER: REJ SCALE: 1=1.00
I:\2004\04213\DWG's 07-28-05\22-Bill of Materials 07-29-2005 11:24:18 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	23	26

Scale: 1"=20'

1198+00 1199+00 1200+00 1201+00 1202+00 1203+00 1204+00

Kansas Southwestern Railway

To remain

Remove 12.5 L.F. 6"White

Remove 24" White Stop Line

Remove 6"Solid White Lane Line to Sta.1205+00

Remove Remove Remove

+25 Remove Exist. 50 L.F. 4" Double Yellow

Remove Remove

Remove 24" White Stop Line

Remove 5 L.F. 6" White

Remove 24" White Stop Line

Remove 60.8 L.F. 4" Yellow Edge Line

+15

Remove 16.5 L.F. 6"White

Note:
Remove Existing Left Turn Arrows from Sta. 1201+00 to Sta. 1205+00.

No.	Revisions	By	Date
1			

CITY OF WICHITA, KANSAS

PAVEMENT MARKING REMOVAL PLAN

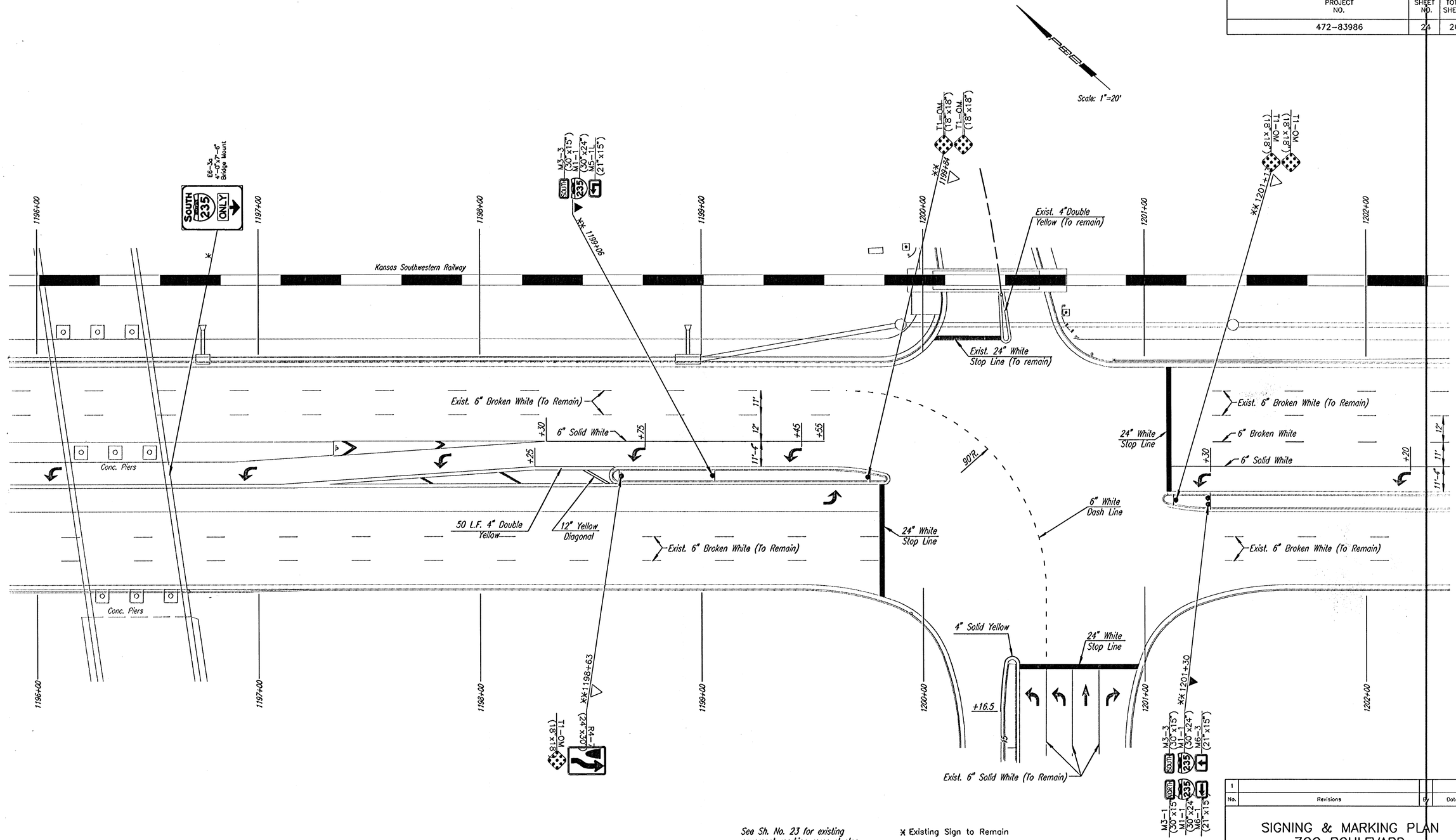
Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	JPM	Checked by	
Drawn by	JGP	Date Sept. 2004	Job No. 04213

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\23-Pvmt Marking Removal Plan 07-29-2005 10:14:24 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	24	26

Scale: 1"=20'



See Sh. No. 23 for existing pavement marking removal plan.

X Existing Sign to Remain
XX Remove and Reset

No.	Revisions	By	Date
1			

SIGNING & MARKING PLAN
ZOO BOULEVARD
STA. 1196+00 TO STA. 1202+25

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

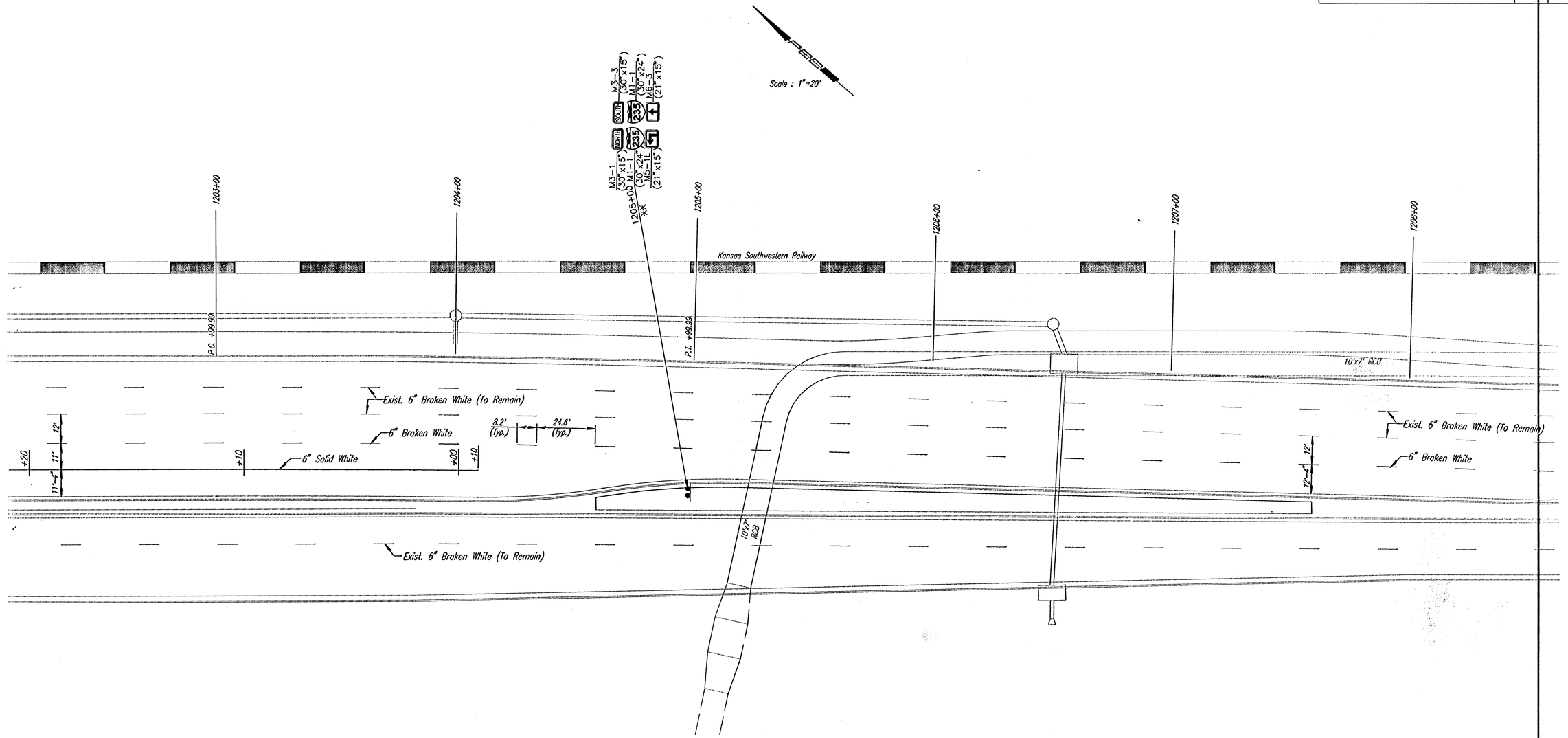
Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004

Job No. 04213

24

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\24-Marking Plan 1196 07-29-2005 10:14:07 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	25	26



XX Remove & Reset

X Existing Sign to Remain

No.	Revisions	By	Date
1			

SIGNING & MARKING PLAN
ZOO BOULEVARD
STA. 1202+25 TO STA. 1208+50

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004

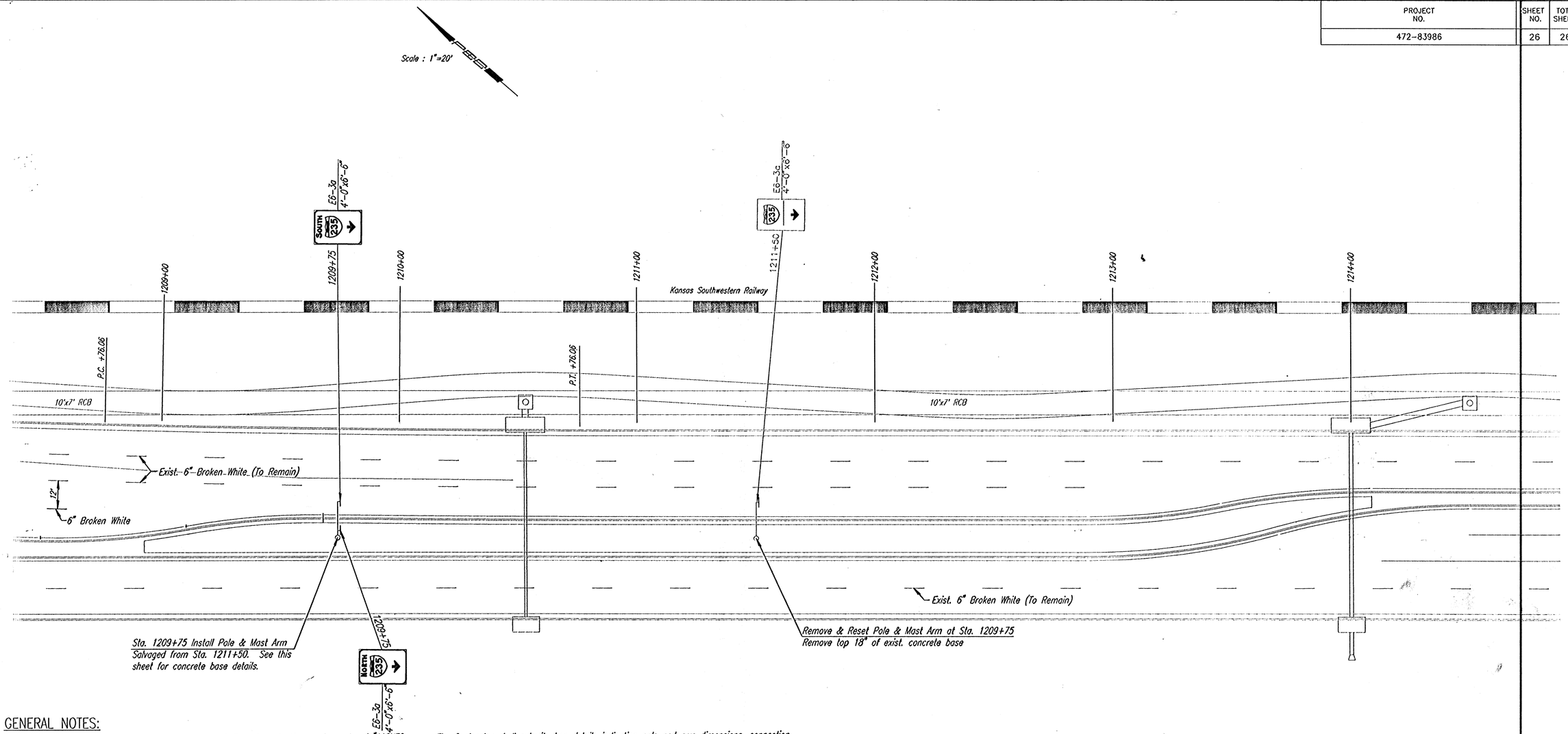
Job No. 04213

25

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWGs 07-28-05\25-Marking Plan 1202 07-29-2005 12:31:32 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	26	26

Scale : 1"=20'



GENERAL NOTES:

DESIGN: The mast arm type overhead sign structure shall conform to the requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs Luminaries and Traffic Signals" 1985 edition and subsequent revisions.

EXCAVATION: Excavate and cast footing to neat lines except to 1'-0" ± which shall be formed. Top 1'-0" ± may be formed 3'-0" square or 3'-0" in diameter. Immediately before placing any concrete the Contractor shall remove all loose material from the bottom of the hole.. All soil used for backfilling around the top of the footing shall be thoroughly compacted as it is place. All excess excavations shall be disposed of as approved by the Engineer.

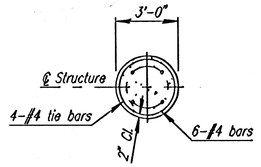
STEEL MAST ARM TYPE SIGN SUPPORT: Poles and arms shall conform to the sub section 1605 of the 1990 "Standard Specifications for State Road and Bridge Construction". The poles and arms shall be tapered tubes made only of one length of steel sheet of not less than #7 Manfacturing Standard Gauge, whose yield strength is a minimum of 55,000 psi. Only one longitudinal weld and no transverse welds, shall be permitted in the fabrication of the poles and arms, (Exception, multiple gauge arms designed for lengths to 40' or greater may have bolted telescopic field joints so as to develop full strength of the adjacent arm sections to resist banding action. The steel anchor base of adequate strength, shape and size, shall be secured to the lower end of the pole by welding in such a manner as to develop the full strength of the adjacent pole to resist bending action. The arm shall be combered as necessary. All parts of the sign support structure shall be galvanized to the requirements of ASTM A123. The pole shall include cover leaving a suitable decive for attaching arm to pole, a handhole and copper wire unless grounded externally and a pole cap. The arm shall include all necessary sign beams, clamps and bolts needed to mount the signs.

The Contractor shall submit shop details indicating pole and arm dimensions, connection details and the details of the sign mounting device.

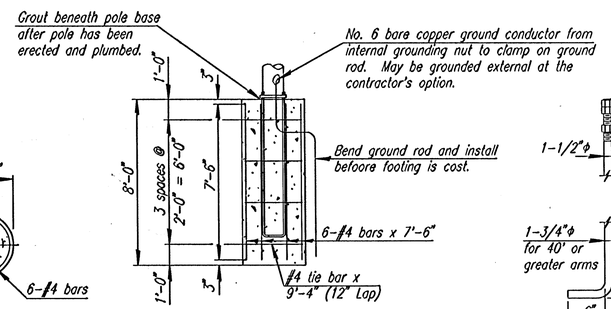
BOLTS: All bolts shall conform to "Standard Specifications for State Road and Bridge Construction" sub-section 1613. The anchor bolts shall be Type II.

FOOTING MATERIALS: The concrete shall be commercial grade or better. The reinforcing steel shall conform to ASTM A615 grade 40 or 60. Curing time shall be 15 days unless flexural beam tests are taken.

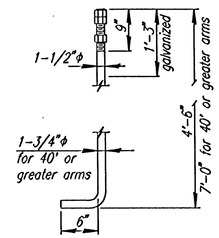
PAYMENT: The bid item "Mast Arm Sign Support" per each shall be full compensation for the complete sign support and footing less the sign panels.



SECTION THRU FOOTING



ELEVATION OF FOOTING



ANCHOR BOLT
(4 per pole Type II)

No.	Revisions	By	Date
1			

SIGNING & MARKING PLAN
ZOO BOULEVARD
STA. 1208+50 TO STA. 1214+75

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004

Job No. 04213

26

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\26-Marking Plan 1208 07-29-2005 10:19:27 am

10-10-81-80

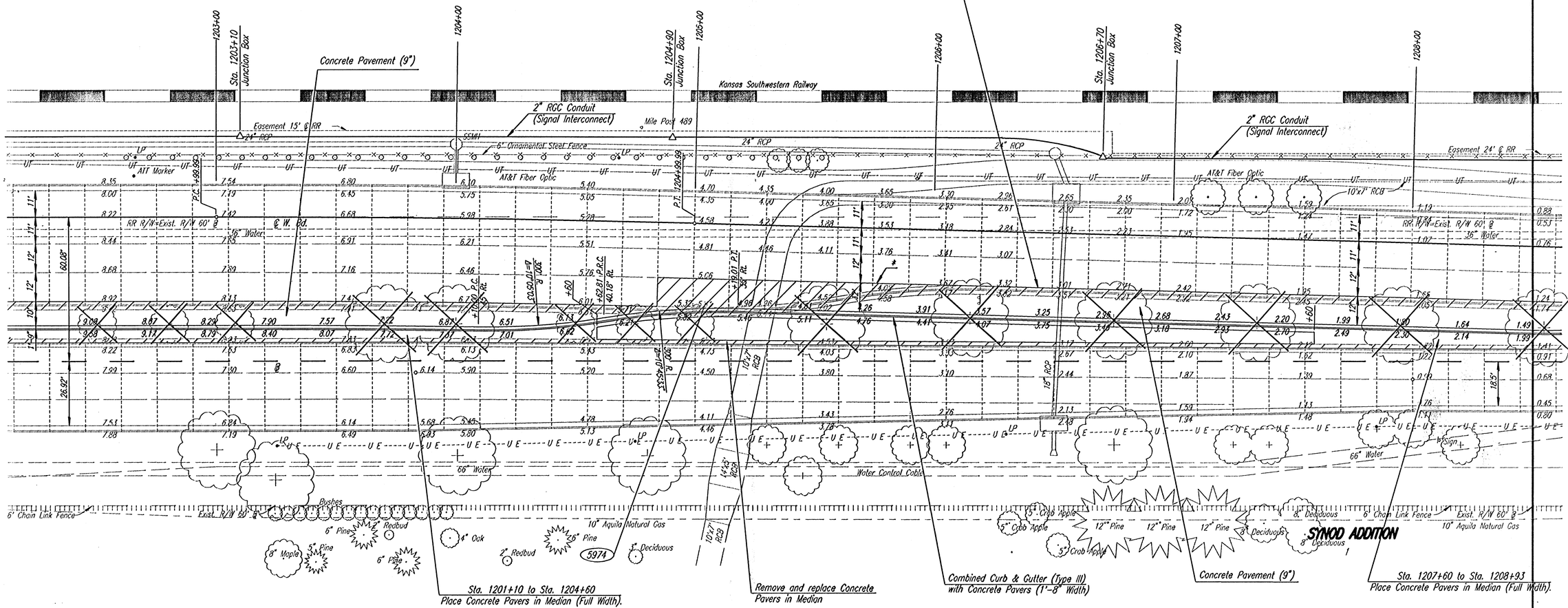
PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	4	26

P.I. ℄ W. Bd. Sta. 1204+00.00 (Bk.)=
P.I. ℄ W. Bd. Sta. 1203+99.98 (Ahd.)=
60.08' Lt. ℄ Sta. 1204+00.00
Δ=1° 30' 00"
D=0° 45' 00"
R=7639.44'
T=100.01'
L= 200.00'
E=0.65'
SE=NC

Note:
Directional bore 2"RGC conduit as needed under pavement and landscaping. Contractor is responsible for damage to existing trees, fence and sidewalk.

Scale : 1"=20'

Sta. 1204+85 to Sta. 1209+68.32
Remove Median Curb & Gutter and Adjacent Pavement as shown. Place Concrete Pavement (9") and Combined Curb & Guttter (Type III) with Concrete Pavers in Median.



Note:
Trees removed from the median shall be disposed of off-site by the Contractor.

The unpaved area of the median shall be sodded with Bermuda Grass sod.

N-1694807.2380 E-1631206.9230
Control Point No. 5974
24.28' Lt. Sta. 1205+04.43
1. 1/2" Rebar at point
2. Chis. + on SW curb median 29.16' W
3. Chis. + on SW curb median 21.77' S
4. Back curb NE curb median 5.00' NE

BM 27-RR spike in NE side power pole NE side RR tracks 5th pole SE of Westdale Dr. ℄ Sta. 1207+65, 163' Lt. Elev.=130.16

No.	Revisions	By	Date
1			

ZOO BOULEVARD
STA. 1202+25 TO STA. 1208+50

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004

Job No. 04213

4

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\04-Plan 1204 07-29-2005 02:44:30 pm

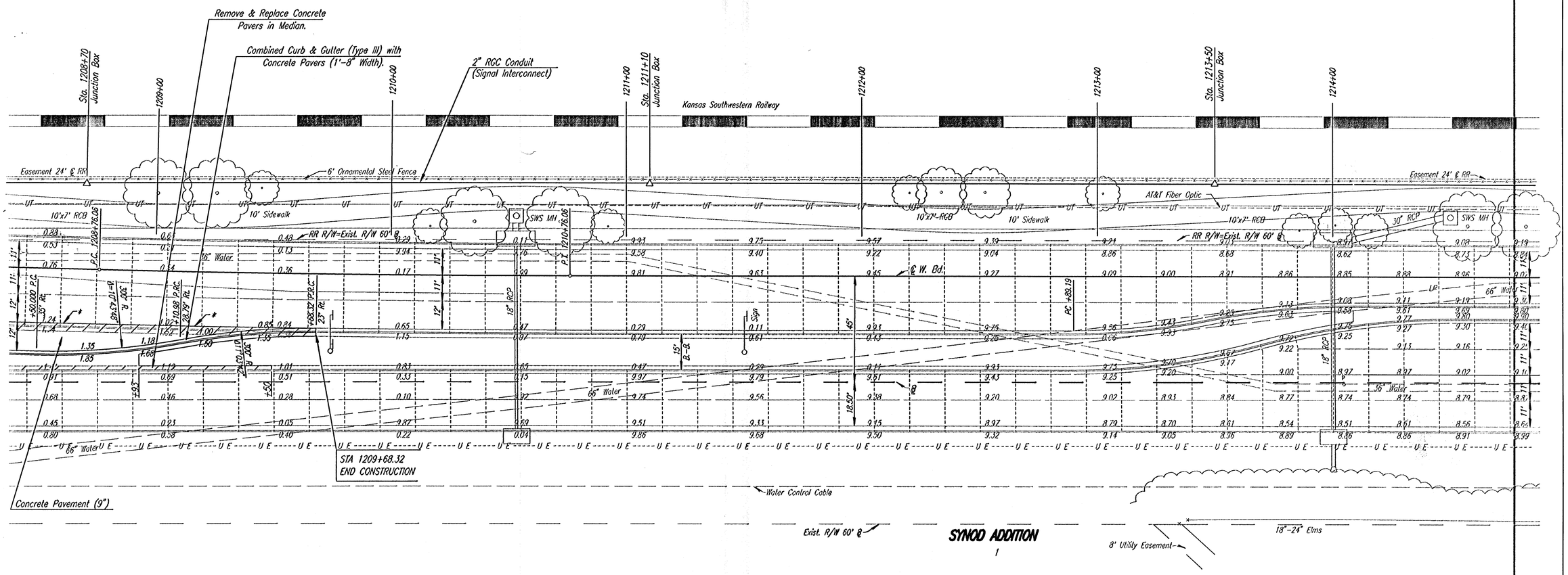
PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	5	26

P.I. ℄ W. Bd. Sta. 1209+76.07 (Bk.)=
P.I. ℄ W. Bd. Sta. 1209+76.05 (Ahd.)=
45.00' Lt. @ Sta. 1209+75.88
Δ=1° 30' 00"
D=0° 45' 00"
R=7639.44'
T=100.01'
L= 200.00'
E=0.65'
SE=NC

Scale : 1"=20'

Note:
Directional bore 2"RGC conduit as needed under pavement and landscaping. Contractor is responsible for damage to existing trees, fence and sidewalk.

Note:
Trees removed from the median shall be disposed of off-site by the Contractor.



No.	Revisions	By	Date
1			

ZOO BOULEVARD
STA. 1208+50 TO STA. 1214+75

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004	Job No. 04213

5

DSNR: BER OPER: BEJ SCALE: 1=20.00
I:\2004\04213\DWGs\07-28-05\05-Plan 1208 07-29-2005 10:18:35 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472 83986	6	26

Scale : 1"=20'

Note:
Directional bore 2"RGC conduit as needed under pavement and landscaping. Contractor is responsible for damage to existing trees, fence and sidewalk.

CAUTION!!!
Contact AT&T
Expose Line Prior to Directional Bore.

CAUTION!!!
Contact Aquila Gas Company
Expose Line Prior to Directional Bore.

CAUTION!!!
SWB Underground Telephone Line

Sta. 1218+30 to Sta. 1218+55
directional bore 2"RGC conduit
under sidewalk.

1215+00 | Sta. 1215+90 Junction Box | 1216+00 | 1217+00 | 1218+00 | Sta. 1218+30 Junction Box | Sta. 1218+55 Junction Box | 1219+00 | 1220+00 | 1221+00

Kansas Southwestern Railway

2" RGC Conduit (Signal Interconnect)

6' Ornamental Steel Fence

5"-8" Elms

Exist. Easement 24' ℄ RR

AT&T Fiber Optic

10' Conc. Sidewalk

10'x7' RCB

AT&T Marker

AT&T Fiber Optic (2" Steel Casing)

Gross

4" RGC

Aquila Natural Gas

Underg. Tel. (SWB)

Overhead Power

4" AGE Gas

Existing 30"

℄ 13TH ST=℄

Rubber Crossing

Iron Pipe

RR Signal Building

RR Signal

4' Chain Link Fence

Water Control Cable

Overhead Power

Sidewalk

Power

DM

Underg. Tel.

Underg. Tel. & TV

Tel. Riser

2-DM

Overhead Power & TV

2" Aquila Natural Gas

6" Aquila Natural Gas

Exist. R/W

30' Pipeline Esmt.

Pipeline Esmt.

RR R/W=Exist. R/W 60' ℄

℄ W. Bd.

66" Water

45.00'

7.50'

16" Water

Overhead Power

10" Aquila Natural Gas

6' Wood Fence

18"-24" Elms (Behind Fence)

Exist. R/W 60' ℄

10" Elm

Gas Mkr.

Gas Vent

Overhead Power

KGE Gas

5693

15" V.C.P. San. Sewer

Conc.

12" Aquila Natural Gas

Gas Mkr.

THUNDERBIRD 8TH ADDITION
BLOCK 1

N-1693769.3890, E-1631984.7320
Control Point No. 5693
55.46' Rt. Sta. 1217+98.94
1. 1/2" Rebar at point
2. Top center gas line marker post 39.90' NW
3. Back curb N curb 13th St. 3.75' S
4. 2 nails in light pole 13.65' NE
5. Dougherty St. 46.5' E

Note: Elevations shown are at even 25 feet stations unless otherwise indicated.

BM 131-RR spike in power pole S side 13th St. N, 125' W of ℄ Dougherty St. 13th Sta. 48+05, 30' Rt. Elev.=129.59

BM 26-Chis. "d" on conc. base RR signal pole north of 13th St. and NE ℄ RR 13th Sta. 51+30, 33' Lt. Elev.=134.195

No.	Revisions	By	Date
1			

ZOO BOULEVARD
STA. 1214+75 TO STA. 1221+00

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

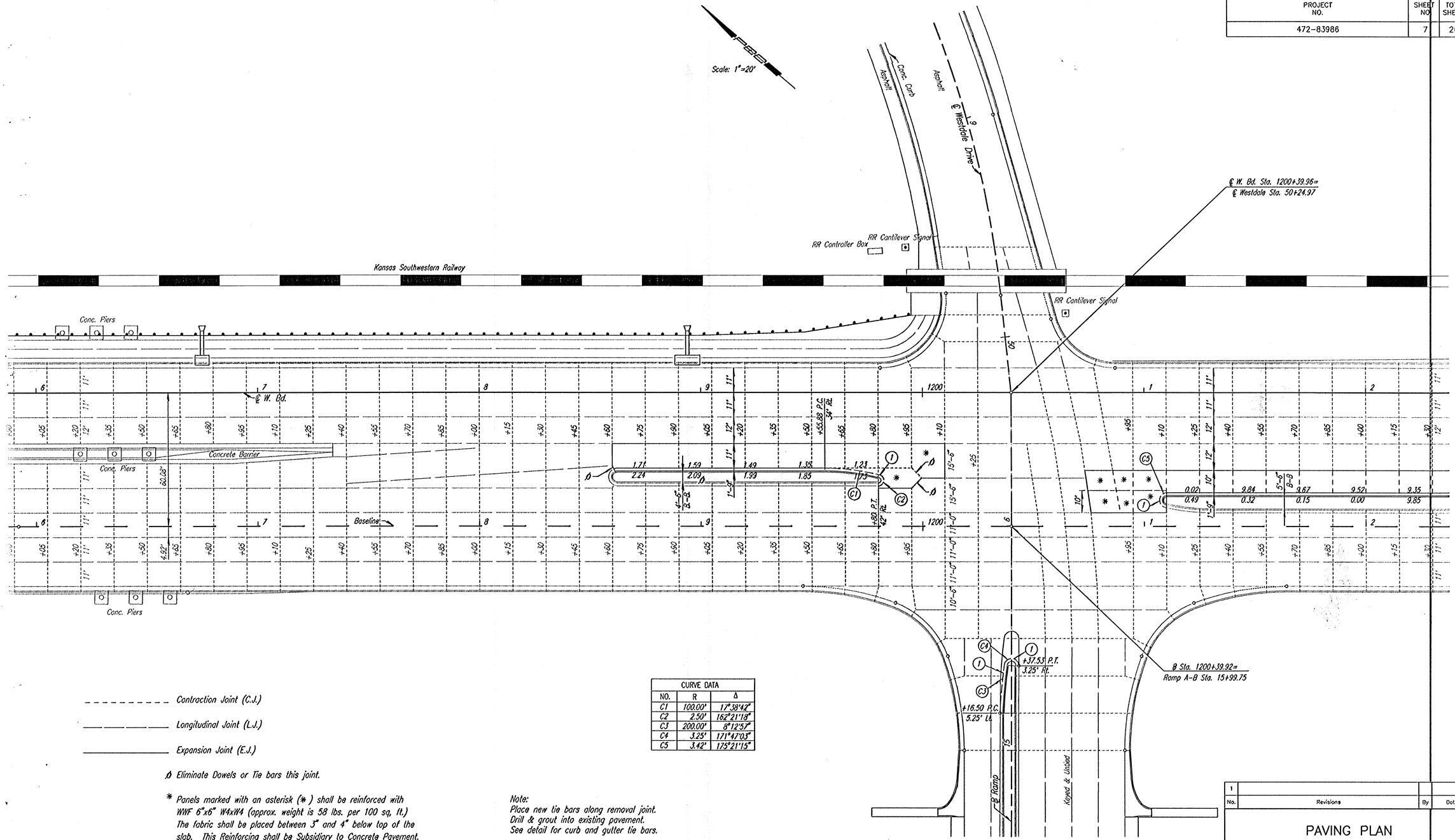
Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004

Job No. 0421-3

6

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\06-Plan 1214 07-29-2005 02:45:00 pm

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	7	26



CURVE DATA		
NO.	R	Δ
C1	100.00'	17°38'42"
C2	2.50'	162°21'18"
C3	200.00'	8°12'57"
C4	3.25'	171°47'03"
C5	3.42'	175°21'15"

---------- Contraction Joint (C.J.)

— — — — — Longitudinal Joint (L.J.)

———————— Expansion Joint (E.J.)

Δ Eliminate Dowels or Tie bars this joint.

* Panels marked with an asterisk (*) shall be reinforced with WWF 6"x6" W4xW4 (opprox. weight is 58 lbs. per 100 sq. ft.) The fabric shall be placed between 3" and 4" below top of the slab. This Reinforcing shall be Subsidiary to Concrete Pavement.

① Place curb and gutter monolithic with adjacent pavement.

Note:
Place new tie bars along removal joint.
Drill & grout into existing pavement.
See detail for curb and gutter tie bars.

No.	Revisions	By	Date
1			

PAVING PLAN
ZOO BOULEVARD
STA. 1196+00 TO STA. 1202+25

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

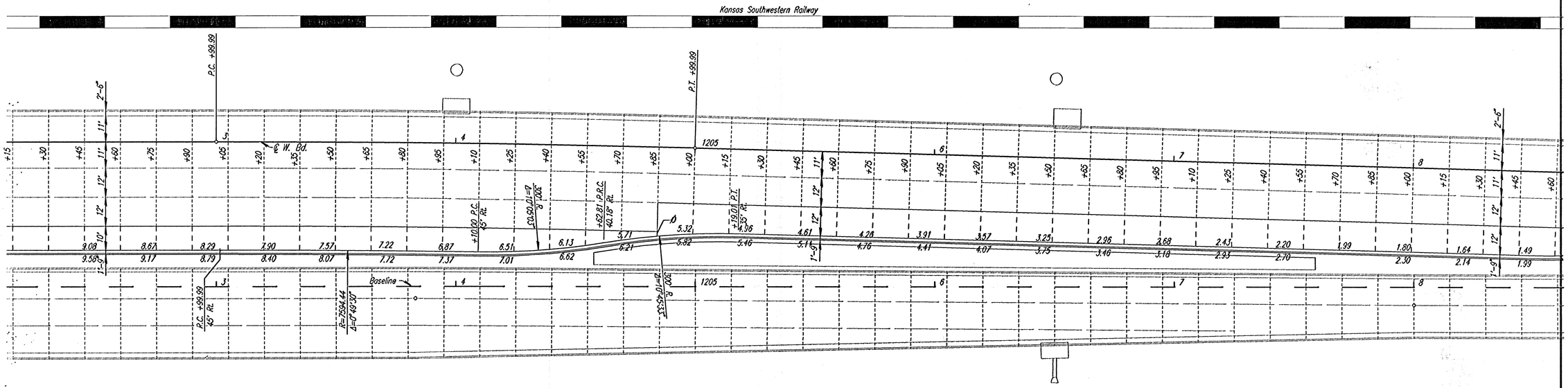
Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004	Job No.	04213

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\07-Paving Plan 1196 07-29-2005 12:01:55 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	8	26

Curve Data
P.I. ℄ W. Bd. Sta. 1204+00.00 (Bk.)=
P.I. ℄ W. Bd. Sta. 1203+99.98 (Ahd.)=
60.08' Lt. ℄ Sta. 1204+00.00
Δ=1° 30' 00"
D=0° 45' 00"
R=7639.44'
T=100.01'
L= 200.00'
E=0.65'
SE=NC

Scale : 1"=20'



Note:
Place new tie bars along removal joint.
Drill & grout into existing pavement.
See detail for curb and gutter tie bars.

---------- Contraction Joint (C.J.)

——— ——— ——— Longitudinal Joint (L.J.)

———————— Expansion Joint (E.J.)

D Eliminate Dowels or Tie bars this joint.

* Panels marked with an asterisk (*) shall be reinforced with WWF 6"x6" W4xW4 (approx. weight is 58 lbs. per 100 sq. ft.) The fabric shall be placed between 3" and 4" below top of the slab. This Reinforcing shall be Subsidiary to Concrete Pavement.

Ⓒ Place curb and gutter monolithic with adjacent pavement.

No.	Revisions	By	Date
1			

PAVING PLAN
ZOO BOULEVARD
STA. 1202+25 TO STA. 1208+50

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by	JPM	Checked by	
Drawn by	JGP	Date June 2004	Job No. 04213

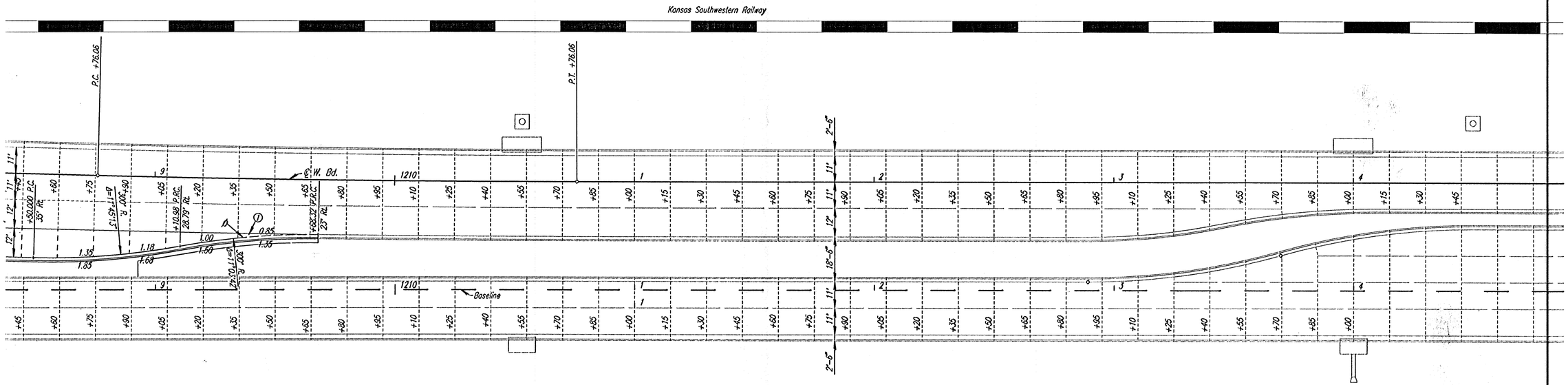
8

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\08-Paving Plan 1202 07-29-2005 12:06:26 am

PROJECT NO.	SHEET NO.	TOTAL SHEETS
472-83986	9	26

Curve Data
P.I. ℄ W. Bd. Sta. 1209+76.07 (Bk.)=
P.I. ℄ W. Bd. Sta. 1209+76.05 (Ahd.)=
45.00' Lt. @ Sta. 1209+75.88
Δ=1° 30' 00"
D=0° 45' 00"
R=7639.44'
T=100.01'
L= 200.00'
E=0.65'
SE=NC

Scale : 1"=20'



---------- Contraction Joint (C.J.)

———— Longitudinal Joint (L.J.)

———————— Expansion Joint (E.J.)

Δ Eliminate Dowels or Tie bars this joint.
① Place curb and gutter monolithic with adjacent pavement.

Note:
Place new tie bars along removal joint.
Drill & grout into existing pavement.
See detail for curb and gutter tie bars.

No.	Revisions	By	Date
1			

PAVING PLAN
ZOO BOULEVARD
STA. 1208+50 TO STA. 1214+75

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

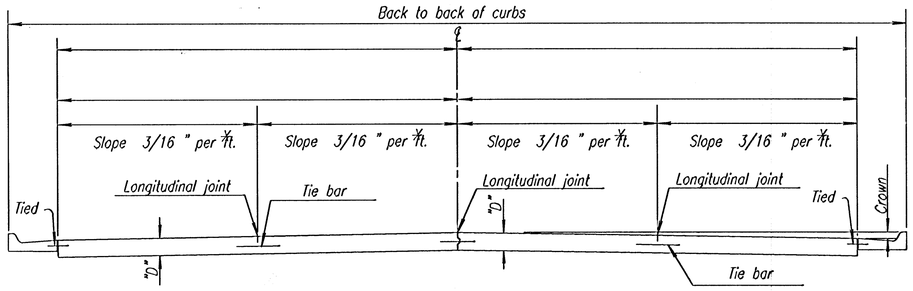
Designed by	JPM	Checked by	
Drawn by	JGP	Date	June 2004
Job No.	04213		

9

DSNR: BER OPER: REJ SCALE: 1=20.00
I:\2004\04213\DWG's 07-28-05\09-Paving Plan 1208 07-29-2005 10:17:44 am

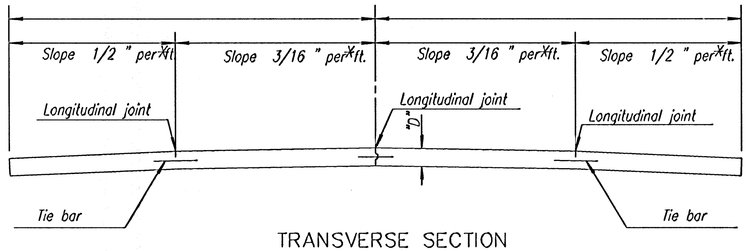
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-83986		10	28

Note: Designer shall add applicable dowel sizes.



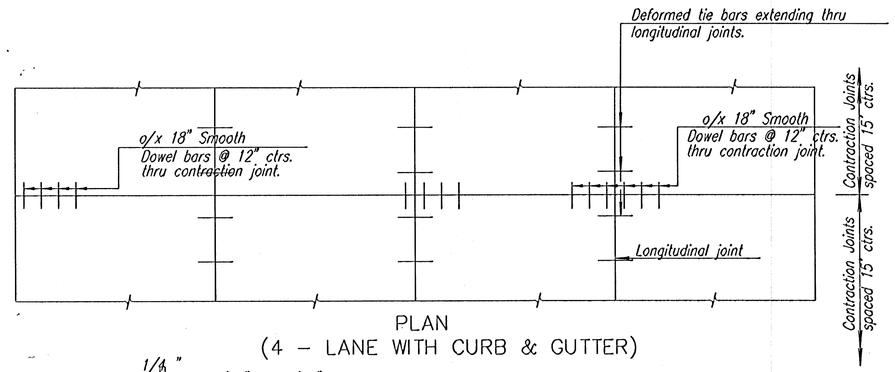
For Curb & Gutter details See Standard Drawing RD635.

TRANSVERSE SECTION
(4 – LANE WITH CURB & GUTTER)

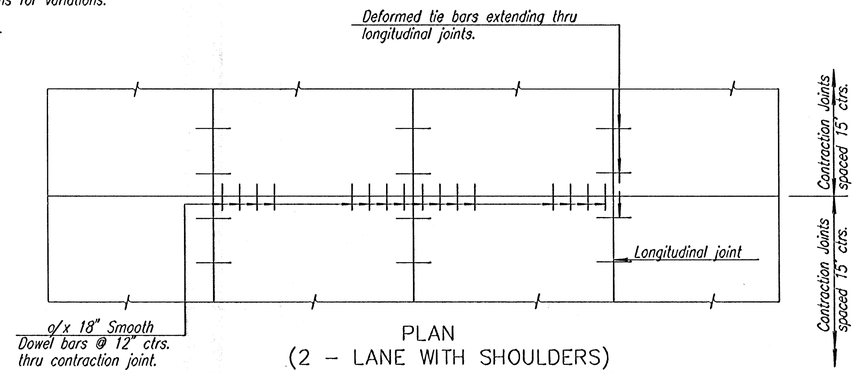


TRANSVERSE SECTION
(2 – LANE WITH SHOULDERS)

* Normal cross slopes. See Typical Section or Cross Sections for variations.



PLAN
(4 – LANE WITH CURB & GUTTER)



PLAN
(2 – LANE WITH SHOULDERS)

GENERAL NOTE

All deformed tie bars shall be epoxy coated. Any damage to the epoxy coating shall be patched in accordance with the Standard Specifications.

Deformed tie bars which require bending shall be billet steel reinforcing bars, Grade 40 and may or may not be epoxy coated.

Pressure relief joints (without load transfer devices) shall be placed at the end of the bridge approach pavement slab. For details of pressure relief joint, see Concrete Bridge Approach Standard.

Unless otherwise noted, load transfer devices as shown in detail shall be used at all contraction joints on mainline pavement. No dowels will be used on shoulder contraction joints unless specifically shown on the plans.

All sawed joints on this project shall be filled with sealant. See Special Provision for type of sealant.

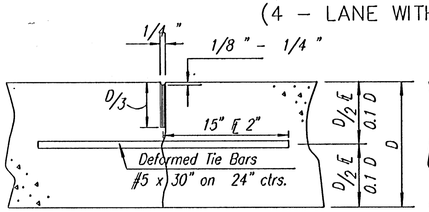
Shape of all keyed joints shall be similar to section of recessed form leg as shown on this sheet.

See Standard Drawing RD707 for concrete shoulder details and corrugation details.

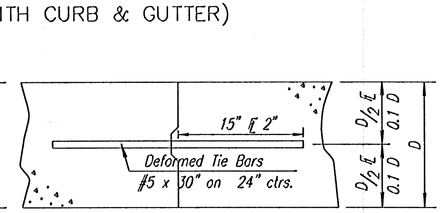
All longitudinal joints shall be tied.

Tie bars shall be evenly spaced along the length of the slab and no tie bars shall be within 12" of contraction joint.

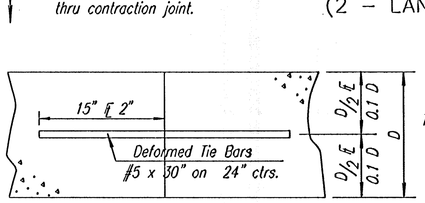
DOWEL SIZE	
D (in.)	Diameter
8	1"
9	1 1/8 "
10	1 1/4 "
11	1 3/8 "
12	1 1/2 "



Tied Non–Keyed



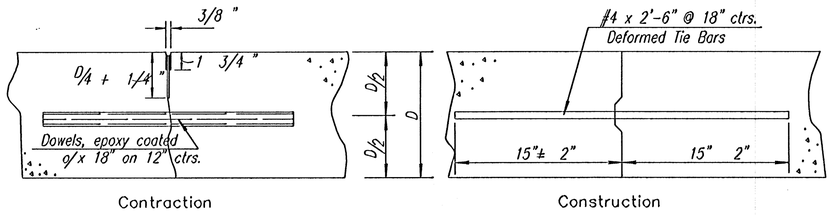
Tied Keyed Construction



Tied Butt Construction

Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type.

LONGITUDINAL JOINTS

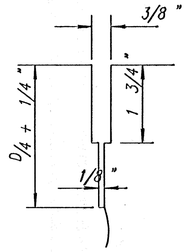


Contraction

Construction

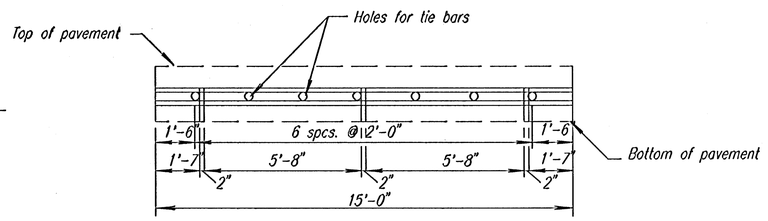
TRANSVERSE JOINTS

Note: Contraction joints will be constructed at the planned location or as directed by the Engineer. When necessary to interrupt continuous placement for a substantial length of time or at the end of a day's pour, the Contractor has the option of ending placement at a contraction joint or with a construction joint located a minimum of five (5) feet from a contraction joint. Either joint type may be constructed by placing a header at the end of the pour or by paving past the joint location location, sawing the joint after the concrete has hardened, and drilling holes for the tie bars or dowels.



DETAIL OF CONTRACTION JOINT SAWCUT

The 1/8 " saw cut (D/4 + 1/4 " depth) shall be done initially; the 3/8 " saw cut shall be accomplished in a separate operation after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.

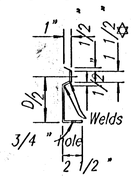


METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT

To be used only against forms. Shall not extend through contraction joints. For automated placement tie bars shall be spaced at uniform 24" centers

✡ Snap-in leg or other approved designs may be used in lieu of welded leg.

PAVEMENT DEPTH
D=0'–9"



SECTION OF
RECESSED
FORM LEG

NO.	DATE	REVISIONS	BY	APP'D
11	3-8-02	Rev. General Note on sawed joints.	S.W.K.	J.O.B.
10	8-14-01	Rev. Longitudinal joint sealant	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT DOWEL JOINTED NON–REINFORCED

RD708

FHWA APPROVAL	4-23-02	APP'D James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

DSNR: BER OPER: REJ SCALE: 1=5.00
I:\2004\04213\DWG's 07-28-05\10-Conc Pvmt Dowel Jointed 07-29-2005 12:10:46 am