

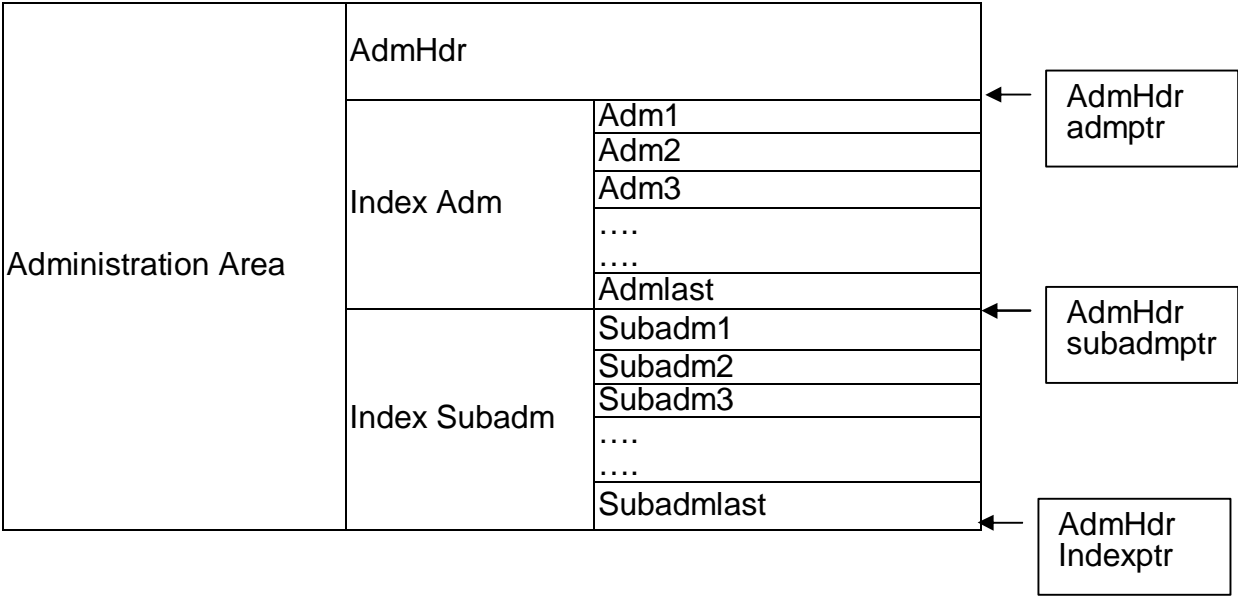
Map 500 map Structure(V1.10)

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Map500 map Structure

	Area	Structure
CRD Map file	Administration Area	AdmHdr
		Index Adm
		Index Subadm
	Search Area	
	Index Area	
	Map Area	MapHdr
		Scale
		Block
		Type
		Map Element
Point data		
Name Area		

1.Administration Area

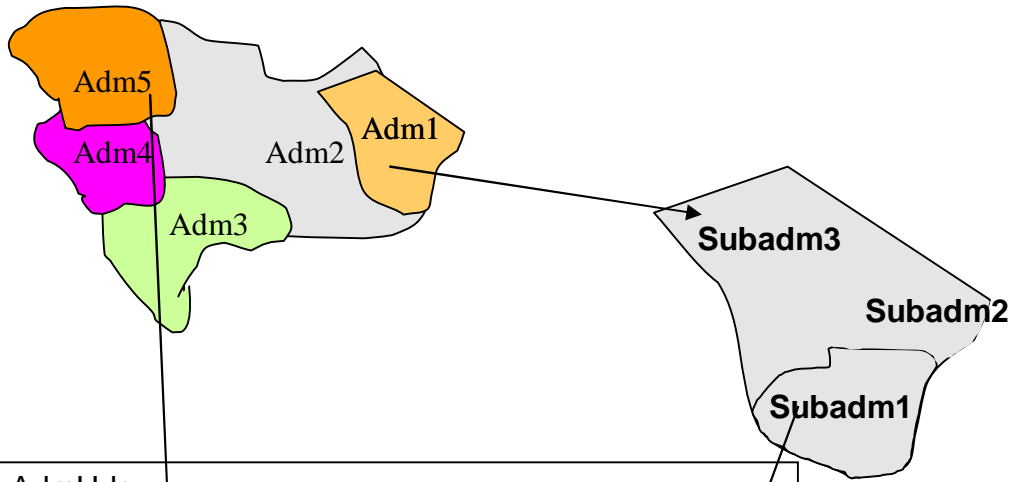


1.1.Administration Header

Name	Unit	Size Bytes	Explain	Address
Admlevel	BYTE	1	How many levels of administration in the Map	1-1
Admptr	Dword (unsigned long)	4	The first address of the administration data.	5-8
Subadmptr	Dword (unsigned long)	4	The first address of the sub-administration data.	9-12
Id	Short	2	The serial numbers of the nation in the world	13-14
Admnum	Short	2	How many administrations in the level one of the map	15-16
Subadmnum	Short	2	How many sub-administrations in the level two of the map	17-18
Indexptr	Dword (unsigned long)	4	The address of the index area.	21-24
Indexsize	Dword (unsigned long)	4	The size of the index area	25-28
Language	char	1	The language of the font	29-29
bBase	char	1	00:General CRD 5A:base map CRD	30-30
Reserved1	short	2		31-32
Reserved2	Int	4		33-36
Reserved3	Int	4		37-40
Reserved4	Int	4		41-44
Reserved5	Int	4		45-48
Reserved6	Int	4		49-52

- I In Europe, the **Language=1**, In English, the **Language=2**.
- I Any language with two bytes structure, such as Chinese (both Traditional and Simplified), Japanese, Korean, etc... the **Language=0**.

Administration Relative (Nation ,Adm ,Subadm)



AdmHdr
 Admlevel=2
 Admptr=Adm1
 Subadmptr=subAdm1
 Id=55
 Admnum=5
 Subnum=17
 Indexptr=

Adm List

	Name_Length	Name_Index	id	subadmptr	subadmnum
Adm1	Length1	Address1	1	1	3
Adm2	Length2	Address2	2	4	5
Adm3	Length3	Address3	3	9	3
Adm4	Length4	Address4	4	12	3
Adm5	Length5	Address5	5	15	3

Subadm list

	Name_Length	Name_Index	Id
Subadm1	Length1	Address1	1
Subadm2	Length2	Address2	2
Subadm3	Length3	Address3	3
Subadm4	Length4	Address4	4
....
....
Subadm15	Length15	Address15	15
Subadm16	Length16	Address16	16
Subadm17	Length17	Address17	17

The id of administration 1

2.Search Area

		Id	Num	Index		
Search area	Adm1	5741	10	0	< -	Living Area
	Adm2	5832	18	10		
				
				
	Adm last-1	6015	13	1587		
	Adm last	7982	11	1600	< -	Water Area
	Adm1	5741	11	0		
	Adm2	5832	14	11		
				
				
	Adm last	7982	4	151	< -	Green Area
				< -	
				< -	
		< -	RailRoad
	Adm last					

It means that there are five Water Areas in last Administration, if some one wants to search them ,he can from the 151st of Index record in Water Area , find next five records . There are 51 type elements from Living Area to RailRoad at the right . See more about index at **Index record 3.1**

2.1.Search Index

Name	Unit	Size bytes	Explain	Address
Id	Short	2	The id number of the Administration	1-2
Num	Word	2	The counts of the type element in this index record at this administration	3-4
Index	DWORD	4	The begin address the type element in this index record at this administration	5-8

Example2.1

Unit : byte

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
5741		10		0				5832		18		10				5931		13	
id		num		index				id		num		index				id		num	
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
28				6001		14		41				6053		42		55			
index				Id		num		index				id		num		Index			
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
6066		2		97				6099		9		101				6347		5	
Id		num		index				id		num		index				id		Num	
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
110				6432		4		115				6549		14		119			
index				Id		num		index				id		Num		index			

“5741 ” means the id of first administration and there are ten waters in this administration. These ten water begin with zero address in water type_elements.

How many types , if no types, it must be 0
 First is “ Living Area
 Second is “ Water Area “

 The one before the end is “RailRoad”
 End is “Border(state,country,and so on)”
 More you can see **Type element define (5.1)**
 Because we just use from Living Area to Border types

The total index record number in Living Area.

3.Index Area

Last=N1

	1	3,4,...,(N1-1),	N1				
Index area	N1	Name(4) admid(4) offset(4) Forward(2) Backward(2)	Name(4) admid(4) offset(4) Forward(2) Backward(2)	Name(4) admid(4) offset(4) Forward(2) Backward(2)	< -	Living Area
	N2					< -	Water Area
	N3					< -	Green Area
					< -
						
		2,3,...,(NM-1),	NM				
	NM	Name(4) admid(4) offset(4) Forward(2) Backward(2)	Name(4) admid(4) offset(4) Forward(2) Backward(2)	Name(4) admid(4) offset(4) Forward(2) Backward(2)	< -	RailRoad

Last=NM

It is a record , if you want to know record , you can see **Index record 3.1**

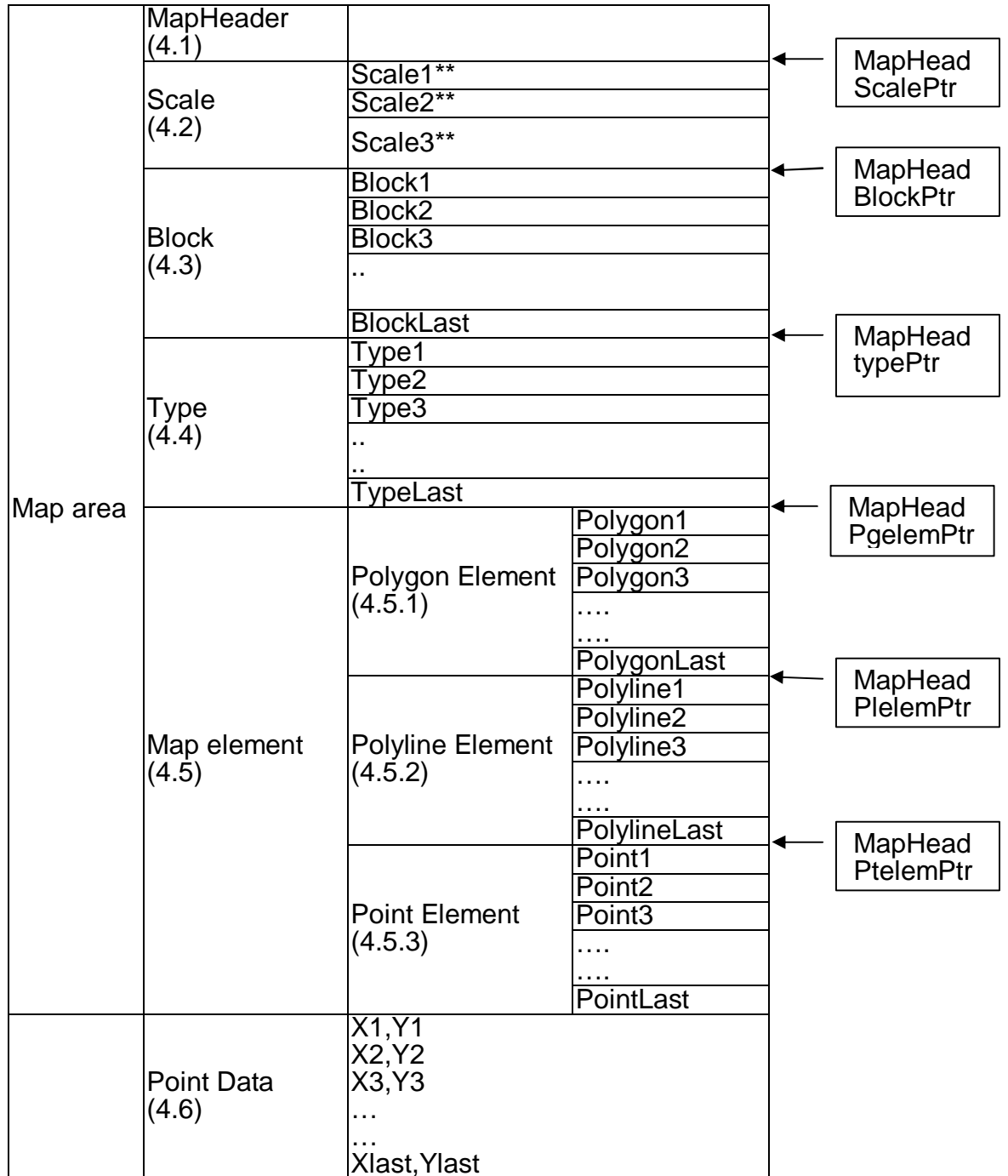
3.1.Index Record

Name	Unit	Size bytes	Explain	Address
Name_Length	Dword : 6	6bits	The length of this type element name	1-4
Name_Index	Dword : 26	26bits	The address of the name in the file	
Admid	Dword	4	The adiminstration of the element	5-8
Offset	Dword (unsigned long)	4	The index of the type elements in map elements list.	9-12
Forward	Word` (short)	2	The relative position between current index and previous alphabetic, first character, first index.	13-14
Backward	Word` (short)	2	The relative position between current index and next alphabetic, first character, first index.	15-16

i.e.

Name	forward	backward
A1	-2	3
A2	-3	2
A3	-4	1
B1	3	2
B2	4	1
D1	2	nD
D2	3	nD-1
...		
Yn	?	1
Z1	nY	0
Z2	nY+1	0

4. Map Area



** we only use three scales :

scale1 use 1:10,000 (1cm : 100m)

scale2 use 1:100,000 (1cm : 1km)

scale3 use 1:1,000,000 (1cm : 10km)

4.1.MapHeader

Name	Unit	Size Byte	Explain	Address
Name	Char	32	The name of the map	1-32
Id	Dword (unsigned long)	4	The id of the map	33-36
Ver	Dword (unsigned long)	4	The version of the map	37-40
Datum	Byte	1	"0 " -> WGS84 "1 " -> TWD67	41-41
content	Byte	1	"0" -> Detail Map for GM100 "1" -> Rough Map for GM305	42-42
Typenum	Byte	1	The numbers of type elements	43-43
Scalenum	Byte	1	The numbers of scales	44-44
Scalectr	Dword (unsigned long)	4	The first address of scale in the map area (begin address of the scale1)	45-48
Blockptr	Dword (unsigned long)	4	The first address of block in the map Area(begin address of the block1)	49-52
Typekprt	Dword (unsigned long)	4	The first address of type in the map Area(begin address of type1)	53-56
Plelemptr	Dword (unsigned long)	4	The first address of polyline in map Area (begin address of polyline1)	57-60
Pgelemptr	Dword (unsigned long)	4	The first address of polygon in map area (begin address of polygon1)	61-64
Ptelemepr	Dword (unsigned long)	4	The first address of point in map Area (begin address of point1)	65-68
Plpartptr	Dword (unsigned long)	4		69-72
Pgpartptr	Dword (unsigned long)	4		73-76
Pointptr	Dword (unsigned long)	4		77-80
Ownerptr	Dword (unsigned long)	4		81-84
Reqptr	Dword (unsigned long)	4		85-88
Shtptr	Dword (unsigned long)	4		89-92
Owner0ptr	Dword (unsigned long)	4		93-96
Owner1ptr	Dword (unsigned long)	4		97-100
Owner2ptr	Dword (unsigned long)	4		101-104
Owner3ptr	Dword (unsigned long)	4		105-108
Rect	Rect (x1,Y1,X2,Y2)	16		109-124

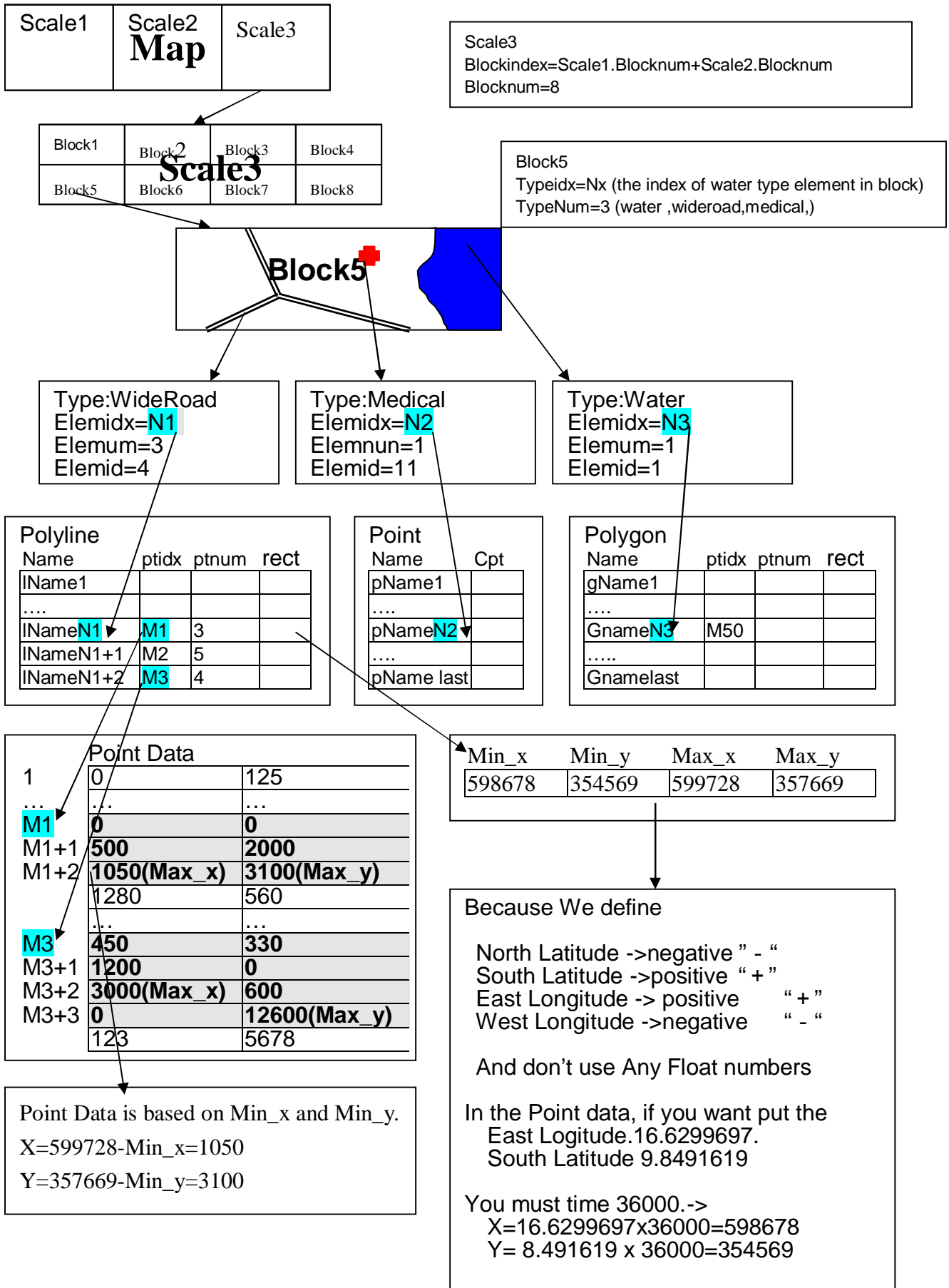
Example4.1

Unit : byte

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
N	O	R	T	H		A	M	E	R	I	C	A											
The name of the map																							
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				
												Id				Ver							
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60				
Da	Co	Ty	Sc	Scaleptr				Blockptr				Typeptr				Plelemptr							
tu	nte	pe	ale																				
m	nt	nu	nu																				
m	m	m	m																				
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80				
Pgelemptr				Ptelemptr				Plpartptr				Pgpartptr				Pointptr							
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00				
Owneptr				Reqptr				Shtptr				Owner0ptr				Owner1ptr							
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20				
Owner2ptr				Owner3ptr				Rectangle(x1,y1,x2,y2)															
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				
Y2								X1				Y1				X2							
Owner2ptr				Owner3ptr				Scaleulx				Scaleuly				Blockwidth				Blockheight			
Scale1																							

- * In the rectangle of the Map header:
 x1 is the minimum x of all the x coordinate,
 x2 is the maximum x of all the x coordinate,
 y1 is the **maximum** y of all the y coordinate,
 y2 is the **minimum** y of all the y coordinate,

Map Relative (Scale,Block, Type,MapElement)



4.2.Scale

Name	Unit	Size bytes	Explain	Address
Scaleux	int	4	Left-down corner x position of the scale	1-4
Scaleuly	Int	4	Left-down corner y position of the scale	5-8
Blockwidth	Dword (unsigned long)	4	Width of block of this scale	9-12
Blockheight	Dword (unsigned long)	4	Height of block of this scale	13-16
Blockrow	Long	4	Num of Block of row of this scale	17-20
Blockcol	Long	4	Num of Block of columns of this scale	21-24
Blockidx	Dword (unsigned long)	4	The address of the first block in the scale	25-28
Blocknum	Dword (unsigned long)	4	The numbers of the blocks in the scale	29-32
Owneridx	Dword (unsigned long)	4		33-36
Ownernum	Dword (unsigned long)	4		37-40

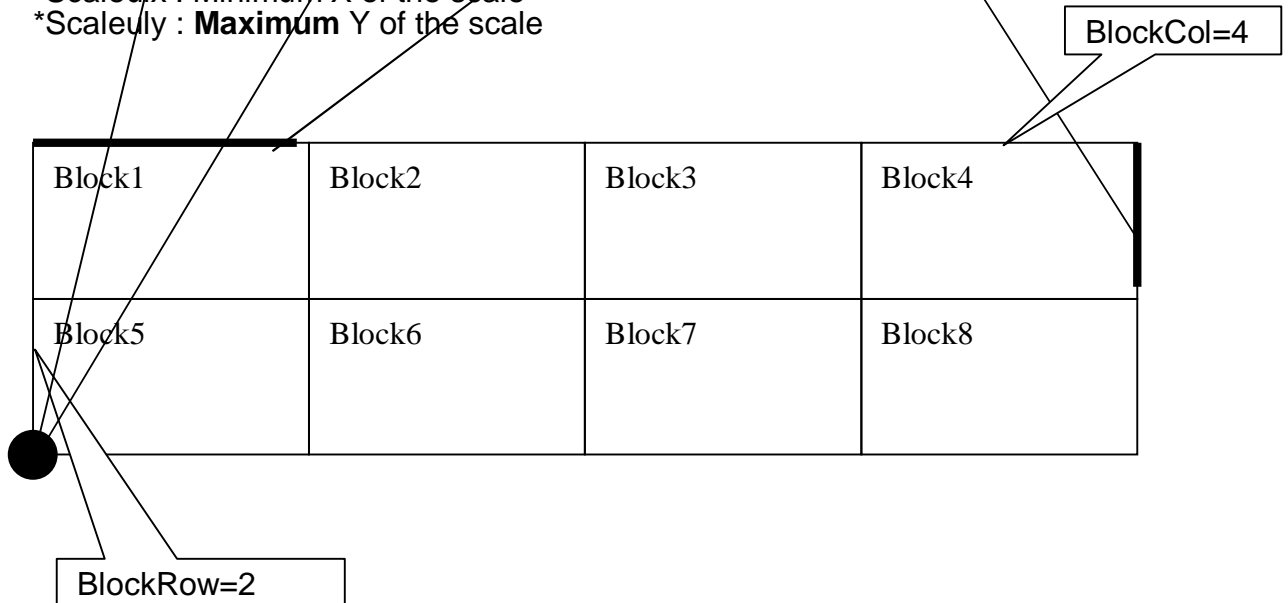
Example4.2

Unit : byte

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
												2							
Scaleux				Scaleuly				Blockwidth				Blockheight				Blockrow			
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
4				8															
Blockcol				Blockidx				Blocknum				Owneridx				Ownernum			

*Scaleux : Minimum X of the scale

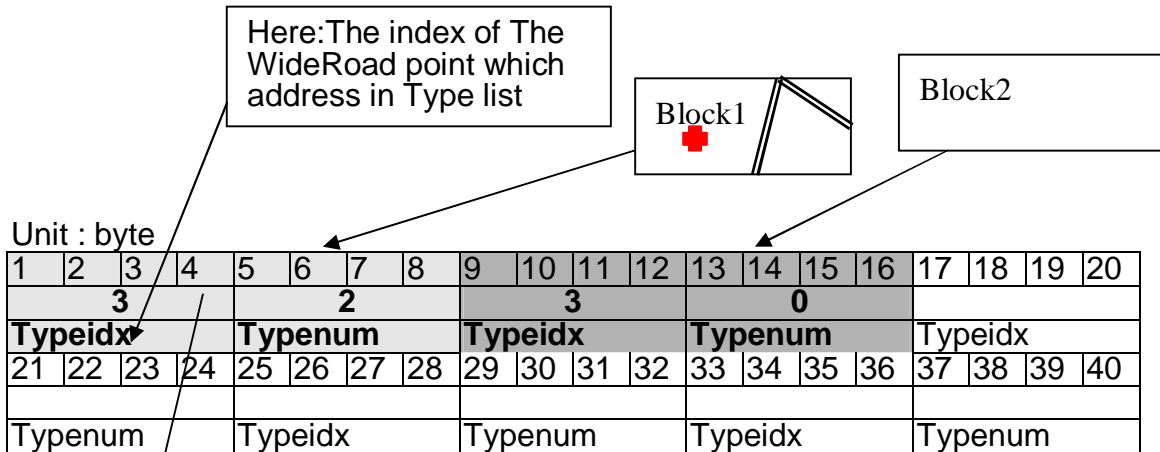
*Scaleuly : **Maximum** Y of the scale



4.4.Block

Name	Unit	Size bytes	Explain	Address
Typeidx	Dword (unsigned long)	4	The index of the first type in this block	1-4
Typenum	Dword (unsigned long)	4	The numbers of types in this block	5-8

Example4.3



Type List

	1	2	3	4	5	6	7	8	9	10	11	12	
1	Elemidx	Elemnum				Elemid							
	13	14	15	16	17	18	19	20	21	22	23	24	
2	Elemidx	Elemnum				Elemid							
	25	26	27	28	29	30	31	32	33	34	35	36	
3					2				4				
	Elemidx				Elemnum				Elemid				
	37	38	39	40	41	42	43	44	45	46	47	48	
					1				11				
4	Elemidx				Elemnum				Elemid				
	49	50	51	52	53	54	55	56	57	58	59	60	
5	Elemidx	Elemnum				Elemid							
....													
Last	Elemidx	Elem num				Elemid							

4.4.Type

Name	Unit	Size bytes	Explain	Address
Elemidx	Dword (unsigned long)	4	The index of this element in the element list (polyline,polygon,point)	1-4
Elemnum	Dword (unsigned long)	4	The numbers of elements	5-8
Elemid	Dword (unsigned long)	4	The define of type elements , you can See more in Type element define	9-12

Example4.4

Here: The index of The Wideroad point which address in Polyline Elements (Because wideroad need have polyline elements to display)

Unit : byte

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2				2				4				1							
Elemidx				Elemnum				Elemid				Elemidx				Elemnum			
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
11																			
Elemid				Elemidx				Elemnum				Elemid				Elemidx			

Polyline Elements List

Name1	Ptidx1	Ptnum1	Cpt1	Rec1
Name2	Ptidx2	Ptnum2	Cpt2	Rec2
Name3	Ptidx3	Ptnum3	Cpt3	Rec3
.....
.....
Namelast	Ptidxlast	Ptnumlast	Cptlast	reclast

Point Elements List

Name1	Cpt1
Name2	Cpt2
Name3	Cpt3
Name4	Cpt4
.....
.....
NameLast	CptLast

4.5.Map Element

The Map Element including three parts : polygon , polyline and point elements

4.5.1.Polygon Element

Name	Unit	Size bytes	Explain	Address
Name_Length	Dword : 6	6bits	The length of this element name	1-4
Name_Index	Dword : 26	26bits	The address of the name in the file	
admid	Dword	4	The administration of the polygon element	5-8
Ptidx	Dword (unsigned long)	4	The index of the Point Data	9-12
Ptnum	Dword (unsigned long)	4	The numbers of the Point Data	13-16
Rect	Rect	16	The size of the polygon element	21-36
Cpt	Point	4	The center of polygon element based on left-top	17-20

* In the rectangle of the polygon
 x1 is the minimum x of the polygon ,
 x2 is the maximum x of the polygon ,
 y1 is the **maximum** y of the polygon
 y2 is the **minimum** y of the polygon,

Example4.5.1

Point Data

X1	Y1
X2	Y2
X3	Y3
X4	Y4
X5	Y5
.....
.....
.....
Xlast	Ylast

4.5.2.Polyline Element

Name	Unit	Size bytes	Explain	Address
Name_Length	Dword : 6	6bits	The length of this element name	1-4
Name_Index	Dword : 26	26bits	The address of the name in the file	
admid	Dword	4	The administration of the polyline element	5-8
Ptidx	Dword (unsigned long)	4	The index of the Point Data	9-12
Ptnum	Dword (unsigned long)	4	The numbers of the Point Data	13-16
Rect	Rect	16	The size of the polyline element	21-36
Cpt	Point (short,short)	4	The center of polyline element based on left-top	17-20

* In the rectangle of the polyline
 x1 is the minimum x of the polyline ,
 x2 is the maximum x of the polyline
 y1 is the **maximum** y of the polyline
 y2 is the **minimum** y of the polylline,

Point Data

X1	Y1
X2	Y2
X3	Y3
X4	Y4
X5	Y5
X6	Y6
X7	Y7
X8	Y8
X9	Y9
X10	Y10
.....
.....
.....
Xlast	Ylast

P.S. The max y minus min y and max x minus min x for each element shall less than 65536.

4.5.3.Point Element

Name	Unit	Size bytes	Explain	Address
Name_Length	Dword : 6	6bits	The length of this element name	1-4
Name_Index	Dword : 26	26bits	The address of the name in the file	
admid	Dword	4	The administration of the map element	5-8
Cpt	Point	8	The center of map element	9-16

4.6 Point Data

The value of X or Y is based on the top-left of the rectangle contained by polygon or polyline.

Name	Unit	Size bytes	Explain	Address
X	unsigned short	2	The offset X data of point data.	1-2
Y	unsigned short	2	The offset Y data of point data	3-4

Example4.6

Unit : byte

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X1		Y1		X2		Y2		X3		Y3		X4		Y4		X5		Y5	
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
X6		Y6		X7		Y7		X8		Y8		X9		Y9		X10		Y10	

5.Name Area

This area contains all strings of Adm, SubAdm, Index, Polyline, Polygon or Point name. Strings in this area are sorted by character.

1	2	3	4	5	6	7	8	9	10
1	1	6	A	R	I	Z	O	N	A
11	12	13	14	15	16	17	18	19	20
A	R	K	A	N	S	A	S	B	A

6.Data Define

6.1.Type element define

0	1	2	3	4	5	6	7
Living	Water	Green	Other	Wide Road	Middle Road	Narrow Road	Airport
8	9	10	11	12	13	14	15
Government	Gas Station	Hotel	Medical	Sport	Scenic	Shop	Bank
16	17	18	19	20	22	23	24
School	Parking	Station	Marina	Other Point	Dam	Harbor	Police
25	26	27	28	29	30	31	32
Car	Restaurant	Rail Station	Camp Ground	Recreation	Park	Culture	Religion
33	34	40	41	42	50	51	255
Building	Monument	Big City Name	Middle City Name	Small City Name	Rail Road	Border	Way Point

6.2.Scale define

0	10000 time	1cm:100m
3	100000 time	1cm:1km
6	1000000 time	1cm:10km

P.S: **ELEM_BORDER** is type 51. This type doesn't need to add into index area for searching and lots field related to searching. We just need to add border data into the map area.