



ORDER INSTRUCTIONS January 2004

We want you to be happy with your building. We have written these instructions to help you fill out our contract and to explain why we need this information. If in doubt, please call your salesperson. They can answer any questions you might have, or find someone who can.

I.A. How to make sure you get what you want.

1. Who are you, where does your building go, and who will own it?
2. What building code should we use to design your building?
3. What building code is most important?
4. What numbers do Spirco engineers want and why?
5. Why did MBMA come up with different numbers than the local building code official?
6. How can nearby buildings, hills, and trees affect your building and what do the Spirco engineers need to know about them?
7. How will the building be used and what is its importance?
8. What is the building use category?
9. What are exposure factors?
10. What's serviceability and why do the Spirco engineers need to know?
11. How fast does the wind blow?
12. What's the wind exposure and enclosure type?
13. Why is ground snow load not your roof snow load?
14. What's the snow exposure factor?
15. What are collateral loads?
16. Heavy loads and how Spirco engineers design your building to hold them up.
17. If an earthquake hits, will your building be OK?
18. What do the Spirco engineers need to know if you want to use something besides the standard metal roof?
19. What kind of walls do you use?
20. Why won't Spirco engineers design your slab and footings? If they won't, who will?
21. Additional information so we know what you want.

I.B. Additional Information Sheets

I.C. Figures

I.D. Spirco example contract

I.E. Explanation of contract

I.F. Contract Process

I.G. MBMA Climatological Data

1. Who are you, where does your building go, and who will own it?

Please provide the information below on the contract. If there is a question, we may need to talk with you quickly to keep production on schedule.

① Name: _____
 Business name: _____
 Address: _____
 City, State, and Zip: _____, _____
 Phone: _____
 Fax: _____
 E-mail: _____

② Please give us your end-user's name, address, city, county, state, zip, and type of business.

Name: _____ Project Location: City: _____
 Business name: _____ County: _____
 Address: _____ State: _____
 City, State, and Zip: _____ Use: _____

③ We have some categories for use.

NUMBER	CLASSIFICATION
1	Commercial Storage of Agricultural Commodities
2	Farm Structures
2.A	On Farm Commodity Storage
2.B	All other farm structures (barns, sheds, workshops)
3	Manufacturing
3.A	Production
3.B	Warehousing/Vehicle Storage
3.C	Equipment Service/Repair (except hangars)
4	Commercial
4.A	Retail Stores
4.B	Warehousing & Storage
4.C	Hangars
4.D	Warehousing/Freight Terminals
4.E	Offices & Banks
4.F	Commercial Garages & Repair Stations
5	Community
5.A	Recreational/Cultural/Assembly
5.B	Educational, including supporting facilities
5.C	Hospital & Health Treatment
5.D	Houses of Worship, excluding schools/recreational
5.E	Government Administration & Public Service
5.F	Transportation
5.G	Residential/Lodging/Apartments/Residential Garages
5.H	Correctional
6	Government for Export
7	All other

This may seem confusing. Call your salesperson and get the definitions if you're not certain. We really do use this information. If your building has several uses, like an office area, a shop, and a shipping warehouse, please tell us all of the uses.

2. What building code should we use to design your building?

We use the building code that your town or county uses. We don't have enough people to keep track of all the changes made by each town and know when they adopt new codes. Many cities and counties issue modifications of the national codes. Some counties and cities adopt the revision immediately. Some are one or two revisions behind. We're good, but not good enough to keep track of all this. We need your help.

The national or model codes are: UBC (Uniform Building Code)
 BOCA (Building Officials and Code Administrators)
 SBC (Standard Building Codes)
 IBC (International Building Code)

State Codes include: North Carolina, Kentucky, Florida, Michigan, and Ohio to name a few

Local codes include: New York City, Los Angeles County and others

Please call the building inspector for the county or city where this building is going to be built. Ask them for the information below and provide it on the contract:

5 Building inspector's name _____ phone _____
 National Code (please check) ___ UBC ___ BOCA ___ SBC ___ IBC Year of code revision _____
 State Code, if applicable _____ Local Code, if applicable _____ Year _____
 Are there local amendments to the code? ___ yes ___ no. If yes, how do we obtain a copy? _____
 Who is the local building inspection manager, building official or plans examiner? How do we contact him by phone? _____

3. What building code is most important?

5 There are many different building codes as noted above. IBC is becoming the predominant code across the country. Many states are basing their state codes on the IBC. Some states enforce the same code statewide. Some allow local codes. Others allow local modifications of the national codes.

Some rules that affect your building are:

- Fire Code provisions for public, hospital and emergency buildings
- Life Safety Code provisions for industrial and public buildings
- Zoning, Land Use, Historic District and Special Use District regulations
- Handicap Access regulations
- Insurance requirements

If the building you contracted for and we ship doesn't meet your local code requirement you could have a big problem getting all your permits. We don't want this to happen to you. We request that you check on the code situation before we design your building.

Here is what you can do to be sure of the codes:

- Check to see which County it lies in.
- Check to see if the lot is inside City limits.
- Call the County (Township) building inspector's office. Ask which code they enforce. Get the name and date of the last national code revision. If there are local amendments, get a copy of them.
- Call the County building official and verify that he says the same thing about the codes.
- After the building official tells you all of this, write down what he said, his name and date. Then ask who handles permits and inspections for the City if the lot is inside the city limits.
- Do exactly the same things if there is a City building code enforcement office. Ask the City which code is required.
- If the building is for a church or school, hospital or public use, call the State Fire Marshal. Ask him about special fire code and Life Safety Code requirements.
- If the building will house, process, or use flammable, explosive, toxic, or infectious materials, check with the insurance agent of the customer.
- Give the Spirco Salesperson all of the collected information.

- Before you sign the contract, you need to check on permit requirements. Spirco needs this information to design your building. It is possible to place your building on “permit hold” pending approval of zoning, site design, handicap access, and other approvals.

Spirco engineers have copies of the national codes, most of the state codes, and some of the local codes. What we cannot track are all of the local code amendments. When you find out that a local code applies, please check to see if we have a copy. If not, purchase a copy and send it to us. If you don't check with us and we do not have a copy of the required code, your building may be delayed until we can obtain one.

Spirco engineers will determine whether the national code or the local amendments are more stringent. We will design to the most stringent applicable requirements.

Some local authorities have special seismic or structural requirements. Please ask whether the local amendments include these special design provisions. We will need a copy of those requirements as well.

4. What numbers do Spirco engineers want and why?

The codes tell us what minimum loads to use. These include dead, wind, live, seismic, ice and snow, collateral and auxiliary. Here are some basic definitions of these loads:

Dead: For our purposes this is the weight of the metal building only.



Wind: Wind applies pressure and suction on the building. This is the most important load for many metal buildings. Some owners ask us to use wind loads higher than the code requires, for extra safety. If your site is near hurricane prone coastlines, we need to know the distance from the building to the oceanline. In Florida and certain gulf coast locations there are special requirements. We need to know if there are any buildings, trees, or hills nearby to apply the wind loads properly.



Live: These are the loads produced by occupancy or maintenance of a building or structure. Live loads are from occupants, workers, equipment, or material during maintenance or movable objects. Live loads do not include environmental loads such as snow, wind, or seismic.

Roof Live – Typical roof live is 20 psf and may be reduced if allowed by the design code. The reduction is based on tributary area that the member supports.

Floor Live – This load is based on the floor use. For example, an office area would have less load than a heavy storage area. As standard practice, Spirco does not reduce floor live loads.



Seismic: These loads are created on the building by an earthquake. It is important to provide us with the weight of any material going on your building. The heavier the material the larger the seismic loads become.



Ice and Snow: When snow builds up (called a snowdrift) an increase in loading results. We need to know about the buildings, trees, and hills nearby that will affect this build up. When other buildings are close by or attached to the new building ice and snow may be real problems. There is a difference between snow and ice buildup on a “warm roof” and a “cold roof”. Please tell us if your building will be heated. Many locations have different ground snow loads in the hills than in the valleys, so please consult the local authorities for loads.



Collateral: These loads are sometimes called dead loads, but we define dead load as the metal building only. Collateral loads are the weights of such things as insulation, ceiling, lights, heating and cooling systems, sprinkler pipes, and electrical cable trays. Even if you don't plan to add these now, it would be a shame if your building needed modifications to support these items later. It is best to give us a collateral load to design your building with that will cover current and future uses.



Auxiliary: These are heavy loads that hang from or lean against your building. Some of these include: hoists, cranes, block and tackle to lift heavy parts, rooftop heating/cooling units, church steeples, grain, cotton seed, signs, and heavy piping for manufacturing.

5. Why did MBMA come up with different numbers than the local building code official?

We belong to the Metal Building Manufacturer's Association (MBMA). They publish a list of minimum loads by county and state, even listing some foreign countries. Copies of the MBMA 2002 edition's loads are contained in Appendix A. These loads are minimum guidelines for IBC. You may need a copy of the MBMA 1996 edition's loads, which are minimum guidelines for BOCA and SBC. If you don't have a copy, we can provide a copy for your reference. Loading for UBC should be taken from the code and verified by your local building official. The state or local codes and local modifications may require heavier loads. MBMA loads are a check to determine the minimum requirements and may not always meet your local code requirements. Therefore, in all cases your local building code official should be consulted.

6. How can nearby buildings, hills, and trees affect your building and what do the Spirco Engineers need to know about them?

- 9 In open terrain with no adjacent structures or hills, the wind loads are at there highest and the snow loads may be reduced. If evergreen trees (conifers) surround the building, it is sheltered and your roof will hold more snow and may have a reduced wind. If the building is attached to or near a taller building, tree line or hill, your roof will hold more snow. If the building is heated, snowmelt will reduce the loads. Unheated buildings get higher snow loads. We use snow exposure factors, importance factors, and heated roof factors to determine the roof snow load. We use exposure factors, topography factors, and importance factors to determine the wind load. Therefore, the surroundings affect the design of your building.
- 14
- 26 If a taller building is within 20 feet of your building, we have to calculate snowdrift. Look at Figure 1A, 1A-1, and 1B for examples of snowdrift and unbalanced snow loads. In addition, a building on a hill can require an increased wind load to be applied to the building. Provide us with the information on Figures 5 and 6 when there are existing buildings or structures within 20 feet of your building.
- 10 If your building is located on the upper half of an isolated hill or escarpment, IBC may require your building to have an increased wind load. The term for this is topography effects. If the location of your building meets all the requirements given below then we must be provided with the information in Figure 7.
Requirements: 1. The hill or escarpment is 60 feet or higher in exposure B or 30 feet or higher if located in exp. C;
2. The maximum average slope of the hill exceeds 10 percent; and
3. The hill or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or one mile, whichever is less.

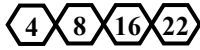
7. How will the building be used and what is its importance?

Each code has importance factors that must be applied to the different loads. The importance factors are based on the building use or occupancy. A building that has a higher occupancy typically has a higher importance factor.

To determine the importance factors required for your building you need to know the following:

- What building code is required? 5
- What will your building be used for? 3 4
- How many people will be in the building? 3 4
- How many in the largest room at any time? 3 4
- Are flammable, toxic or hazardous materials stored, produced or used in the building? 3 4
- Is this building crucial to national defense or emergency response? 3 4
- Will the building be used by Civil Defense as a disaster shelter? 3 4
- Is the building part of a power generating or distributing system? 3 4

The following table is a summary of the national codes importance factors. If local codes have special requirements, this information must be provided on our contract.



IMPORTANCE FACTORS PER CODE

Occupancy	Nature of Occupancy		Seismic Factor, I_E	Snow Factor, I_S	Wind Factor, I_W
Standard Building	Buildings and other structures except those listed in the below categories	SBC	N/A	1.0	1.0
		IBC	1.0	1.0	1.0
		BOCA ¹	N/A	1.0	1.0 ¹ /1.10 ^{**}
		UBC	1.0	1.0	1.0
High Occupancy Buildings	Buildings and other structures that represent a substantial hazard to human life in the event of a failure including, but not limited to: Buildings and other structures where more than 300 people congregate in one area Buildings and other structures with elementary school, secondary school or day-care facilities with capacity greater than 250 Buildings and other structures with a capacity greater than 500 for colleges or adult education facilities Health care facilities with a capacity of 50 or more resident patients but not having surgery or emergency treatment facilities Jails and detention centers Any other occupancy with an occupant load greater than 5,000 Power-generating stations, water treatment for potable water, waste water treatment facilities and other public utility facilities not included in the Essential Facilities category Buildings and other structures not included in the Essential Facilities category containing sufficient quantities on toxic or explosive substances to be dangerous to the public if released	SBC	N/A	1.10	1.15
		IBC	1.25	1.10	1.15
		BOCA ¹	N/A	1.10	1.15 ¹ /1.23 ^{**}
		UBC	1.0	1.15	1.0
Essential Facilities	Buildings and other structures designated as essential facilities including, but not limited to: Hospitals and other health care facilities having surgery or emergency treatment facilities Fire, rescue and police stations and emergency vehicle garages Designated earthquake, hurricane or other emergency shelters Designated emergency preparedness, communication, and operation centers and other facilities required for emergency response Power-generating station and other public utility facilities required as emergency back up facilities for Essential Facilities structures Structures containing highly toxic materials Aviation control towers, air traffic control centers and emergency aircraft hangars Buildings and other structures having critical national defense functions Water treatment facilities required to maintain water pressure for fire suppression	SBC	N/A	1.20	1.15
		IBC	1.50	1.20	1.15
		BOCA ¹	N/A	1.20	1.15 ¹ /1.23 ^{**}
		UBC	1.25	1.15	1.15
Low Hazard Buildings	Buildings and other structures that represent a low hazard to human life in the event of a failure including, but not limited to: Agricultural facilities Certain temporary facilities Minor storage facilities	SBC	N/A	0.80	0.90
		IBC	1.0	0.80	0.87 ²
		BOCA ¹	N/A	0.80	0.90 ¹ /1.0 ^{**}
		UBC	1.0	0.90	1.0

- For regions between the hurricane oceanline and 100 miles inland, the importance factor shall be determined by linear interpolation.
- In hurricane regions with $V > 100$ mph, the importance factor shall be 0.77.

* 100 miles from oceanline

** At hurricane oceanline

8. What is the building use category?

3 Sometimes, the building use category is not clear-cut. If the building is an office and warehouse all inside one structure, then the percentage of each use determines the overall use. Please just tell your salesperson which uses are in the building and he will help you figure the proper category.

9. What are exposure factors?

We use snow and wind exposure factors to determine the design loads on your building. These are different depending on your site conditions and the building code. Exposure factors tell us what your building site is like so we can design it properly. Consult your engineer of record or the local building official to determine what exposures to use.

9

Figure 2 gives you the national code wind exposure definitions and section 12 gives a short discussion of it. We ask that you give us the wind exposure of your building site so we can properly apply the wind in the design.

14

Section 14 gives an explanation of snow exposures and the national code snow exposure definitions and factors. We ask that you give us the snow exposure your building is in (partially, fully, or sheltered) and we will determine the snow exposure factor to use.

10 26

We also need information about nearby buildings, hills, and trees. We use this information to calculate snow loads and wind loads.

10. What's serviceability and why do the Spirco engineers need to know?

We design buildings for strength, based on the code for the building location. Additionally the design is per the use requirements. We must also design for serviceability. Serviceability concerns are:

27

- Amount of bending we build into prefabricated members (camber)
- Expansion and contraction
- Amount of movement under load (deflection, vibration and drift)
- Connection slippage and gradual deformation
- Corrosion

We ask the purchaser to help define many of the above items. We discuss camber, when appropriate. We use our MBMA guidelines for movements under load. We design to meet the code requirements, but ask for customer input.

Review the following tables and let us know if you want something different. We use our standards unless you have a special requirement. Deflections shown are the worst tolerable limit. Glass breakage, masonry cracking, and building noise can all be reduced by limiting the deflections.

The following tables are Spirco Standards as noted on the contract, which have been taken from the AISC Steel Design Guide # 3. For any material or case not listed, the serviceability requirements must be given to us on the contract.

**Table 3.1
Serviceability Considerations - Roofing**

27

ROOFING TYPE	STRUCTURAL ELEMENT	DEFORMATION	RECOMMENDATION	LOADING
METAL ROOFS THROUGH FASTENER TYPE	EXPANSION JOINTS	HORIZONTAL MOVEMENT	100' TO 200' Max.	THERMAL
	ROOF	SLOPE	½" /FT. Min.	DRAINAGE
	PURLIN	VERTICAL DEFLECTION	L/150 Max.	SNOW LOAD
	PURLIN	VERTICAL DEFLECTION	POSITIVE DRAINAGE	DL + .5 × SNOW LOAD DL + 5 PSF (Min)
METAL ROOFS STANDING SEAM	EXPANSION JOINTS	HORIZONTAL MOVEMENT	150' TO 200' Max.	THERMAL
	ROOF	SLOPE	1/4" /FT. Min.	DRAINAGE
	PURLIN	VERTICAL DEFLECTION	L/150 Max.	SNOW LOAD
	PURLIN	VERTICAL DEFLECTION	POSITIVE DRAINAGE	DL + .5 × SNOW LOAD DL + 5 PSF (Min)

**Table 3.2
Serviceability Considerations - Cladding**

27

CLADDING SUPPORT TYPE	CLADDING TYPE AND SUPPORT ELEMENT	DEFORMATION	RECOMMENDED MAXIMUM	LOADING
FOUNDATION	METAL PANELS/ BARE FRAME	DRIFT PERPENDICULAR TO WALL	H / 60 TO H / 100	10 YEAR WIND
	METAL PANELS/ GIRTS	HORIZONTAL DEFL.	L / 120	10 YEAR WIND
	METAL PANELS/ WIND COLUMNS	HORIZONTAL DEFL.	L / 120	10 YEAR WIND
	PRECAST WALLS/ BARE FRAME	DRIFT PERPENDICULAR TO WALL	H / 100	10 YEAR WIND
	UNREINFORCED MASONRY WALLS / BARE FRAME	DRIFT PERPENDICULAR TO WALL	1/16" CRACK WIDTH * WALL BASE	10 YEAR WIND
	REINFORCED MASONRY WALLS / BARE FRAME	DRIFT PERPENDICULAR TO WALL	H / 200 †	10 YEAR WIND
	MASONRY WALLS / GIRT	HORIZONTAL DEFL.	L / 240 ≤ 1.5 "	10 YEAR WIND
	MASONRY WALLS / WIND COLUMNS	HORIZONTAL DEFL.	L / 240 ≤ 1.5 "	10 YEAR WIND
	MASONRY WALLS / LINTEL	VERTICAL DEFL.	L / 600 ≤ 0.3 "	DL + LL
	MASONRY WALLS / LINTEL	ROTATION	≤ 1 deg.	DL + LL

Notes * - 1/8" WITH PROPER DETAILING

† - H / 100 WITH PROPER DETAILING

Additional Spirco Standard: Metal Studs with brick veneer, stucco, or dryvit horizontal deflection: H/100 to H/200 for the frame drift and L/240 for the wall members for 10 year wind.

Table 3.3
Serviceability Considerations - Ceilings & Partitions

27

<i>FINISH TYPE</i>	<i>STRUCTURAL ELEMENT</i>	<i>DEFORMATION</i>	<i>RECOMMENDED MAXIMUM</i>	<i>LOADING</i>
CEILING	ROOF MEMBER	VERTICAL DEFLECTION	L / 360 (PLASTERED CEILINGS)	LL OR 50 YR. SNOW
	ROOF MEMBER	VERTICAL DEFLECTION	L / 240	LL OR 50 YR. SNOW
	FLOOR BEAM / GIRDER	VERTICAL DEFLECTION	L / 360 ≤ 1"	DL
PARTITION	FRAME	LATERAL DRIFT	H / 500	10 YR. WIND
	ROOF MEMBER	VERTICAL DEFLECTION	3 / 8" TO 1" †	.5 × LL OR 50 YR. SNOW
	FLOOR BEAM / GIRDER	VERTICAL DEFLECTION	L / 360 ≤ 3 / 8" TO 1"	.5 × LL
NOTES	† - DEPENDS ON PARTITION DETAILS			

Table 3.4
Serviceability Considerations - Equipment

27

<i>EQUIPMENT TYPE</i>	<i>STRUCTURAL ELEMENT</i>	<i>DEFORMATION</i>	<i>RECOMMENDED MAXIMUM</i>	<i>LOADING</i>
TOP RUNNING CRANES	RUNWAY SUPPORTS	TOTAL INWARD MOVEMENT †	1 / 2"	CRANE VERTICAL STATIC LOAD
	RUNWAY SUPPORTS	TOTAL OUTWARD MOVEMENT †	1"	SNOW
	RUNWAY BEAM	HORIZONTAL DEFLECTION	L / 400	CRANE LATERAL
	RUNWAY BEAM	VERTICAL DEFLECTION	L / 600; CMAA CLASS A, B, C	CRANE VERTICAL STATIC LOAD
	RUNWAY BEAM	VERTICAL DEFLECTION	L / 800; CMAA CLASS D	CRANE VERTICAL STATIC LOAD
	RUNWAY BEAM	VERTICAL DEFLECTION	L / 1000; CMAA CLASS E, F	CRANE VERTICAL STATIC LOAD
TOP RUNNING CAB OPERATED	BARE FRAME	DRIFT AT RUNWAY ELEV.	H / 240 ≤ 2"	CRANE LATERAL OR 10 YEAR WIND
TOP RUNNING PENDANT OPERATED	BARE FRAME	DRIFT AT RUNWAY ELEV.	H / 100	CRANE LATERAL OR 10 YEAR WIND
UNDERHUNG CRANE	RUNWAY FRAME	VERTICAL DEFLECTION	L / 450; CMAA CLASS A, B, C	CRANE VERTICAL
JIB CRANE	BOOM	VERTICAL DEFLECTION	L / 225	CRANE VERTICAL
NOTES	† - SUM OF BOTH RUNWAYS			

11. How fast does the wind blow?

7 Some building codes give wind speeds in fastest mile per hour. These are speeds exceeded on average only once in 50 years. They are measured at 33 feet above ground. IBC wind is based on ASCE 7, which gives the wind speeds in 3-second gusts. Wind speeds are shown in each of the national codes on maps. Special wind zones in the Smoky Mountains, along the Great Lakes, and in the Rocky Mountains are identified. Be sure to get the local building official to give you the wind load for those areas. It's a good idea to ask every time, because the city may have different design values from the surrounding county.

The design wind speed is 110 miles/hour to 140 miles/hour at the outer banks of North Carolina and the southern tip of Florida. The Atlantic and Gulf of Mexico are around 100 miles/hour from North Carolina to Corpus Christi, Texas. Most of the Texas gulf coast counties now require special certifications by specifically trained and certified engineers for wind stability. Some special requirements like South Florida, Dade and Broward counties, we cannot meet.

Some special requirements along the coasts often require the building to be designed for either water surge or flying debris or some other criteria for hurricane exposures. For coastal counties, we need to know how far the building site is from the oceanline.

9 BOCA, UBC and IBC apply wind exposures as discussed in section 12 and shown on Figure 2. BOCA and IBC use internal and external pressure coefficients, with gust response factors and many other calculations. SPIRCO engineers will do the math, if you supply the information requested on the contract.

12. What's the wind exposure and enclosure type?

9 There are wind exposure factors in the UBC, IBC and BOCA codes. SBC does not distinguish between different exposures. Figure 2 shows the exposure categories. The BOCA and IBC codes distinguish between tall, urban type obstructions, upwind and hilly terrain with significant tree cover, while the UBC does not.

BOCA and IBC also distinguish between treeless flat terrain, near large water bodies and flat, relatively unobstructed terrain much more than UBC. IBC, based on ASCE 7, may require ground elevation changes to be taken into account when your building is on a hill.

6 10

6 A hollow object with only one side open will be picked up by the wind easier than the same object with all walls solid. This is the principle wind enclosure is based on. The degree of enclosure is very important. Freight terminals, automotive service bays, and similar structures may need to be considered partially enclosed if the doors remain open. When Spirco engineers suspect the enclosure specified on the contract could be wrong, they will refer the building back to sales for questions and a costly change order could result.

30 The doors and windows that are in your building should be designed to withstand the wind loads per the applicable code. When they are not we need to know. If they are not designed to withstand the wind loads, we have to consider them open. Glass has a special requirement in wind borne debris areas, with wind speeds greater than 110 mph and within one mile of a hurricane coast, or any area with wind speeds greater than 120 mph, in the IBC. Glass in these areas must be impact resistant or protected with an impact-resisting standard. You should consult your engineer of record or door / window manufacturer to help determine these requirements.

6 ASCE 7 defines an open building as one with all walls at least 80% open. It defines a partially enclosed building as one that meets all the following:

- In one wall the openings exceed in area all of the rest of the building by 10%
- more than 4 square feet are open,
- 1% of the wall area, whichever is greater,
- and the percentage of openings in the roof and other walls does not exceed 20%.

Figure 3 illustrates the differences in definition and use between codes.

13. Why is ground snow load not your roof snow load?

13 The order and contract forms ask for ground snow load or roof snow load. Most codes give a maximum determined by years of observations from snow gauges in open areas. It may not correct for hilly, forested, or urban areas.

There are differences between roof snow loads and ground snow loads. We use the importance factor, exposure factor, and thermal factor to adjust the ground snow to determine the roof snow. If the building is all by itself, surrounded by flat prairie, wind can keep the snow off the roof. Therefore, the roof snow is reduced. If there are trees, buildings and hills nearby, the snow doesn't blow off as easily. Therefore, the roof snow is larger than the open case. Fully sheltered roofs with tall tree cover and hills don't get much wind or sun. Therefore, the roof snow can become very large.

14. What's the snow exposure factor?

14 The snow exposure definitions are listed below. The snow exposure factor is multiplied by the ground snow and other roof factors to determine the roof snow load. It is dependent on wind, terrain, and tall obstructions like trees, hills, and buildings.

Snow exposure may change. You might place your building next to a clear-cut pine forest. In 15 years, the forest would be growing back and the exposure factor may rise from 0.8 to 1.2. Spirco engineers can only certify and design to ground snow loads according to the code and exposure that is sent to us when we design the building. You should carefully think over the snow exposure you want to use.

15 Buildings that are heated typically have warmer roofs. Warm roofs melt snow faster and drop snow easily. If the roof is only heated on certain work days or not at all, the cold roof factor should be used to increase snow loads. It is important for our engineers to know if the building will be heated or not. Table 1.5.2 from the 2002 MBMA shows some examples of typically heated or unheated buildings.

We also check unbalanced snow loads like shown on Figures 1A, 1A-1 and 1B. We do drift calculations for the windward and leeward roof as shown on the bottom of Figure 1B. Where snow can fall from a high roof to a lower roof, we add a sliding snow surcharge.

SNOW EXPOSURE DEFINITIONS

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Partially Exposed: Roofs not fully exposed or sheltered.

Fully Exposed: Roofs exposed on all sides with no shelter, generally open terrain extending one half mile or more. Roofs with large mechanical equipment or other obstructions are not included in this category.

Sheltered: Roofs located in densely forested areas that qualify as an obstruction (typically conifer trees). An obstruction is defined as being taller than the roof and within a distance of 10 times the height of the obstruction above the roof.

SNOW EXPOSURE FACTORS

Snow Exposure (C_e)				
	Terrain Category	Partially Exposed	Fully Exposed	Sheltered
IBC SBC BOCA	A	1.1	N/A	1.3
	B	1.0	0.9	1.2
	C	1.0	0.9	1.1
	D	0.9	0.8	1.0
UBC	N/A	0.7	0.6	0.9

**Table 1.5.2
Typical Heated and Unheated Building Usage**

Heated ($C_t = 1.0$)	Unheated ($C_t = 1.2$)
Manufacturing Production	Agricultural Buildings
Manufacturing Equipment Service	On-Farm Structures
Commercial Retail Stores	Commercial Warehouse/Freight Terminals ¹
Commercial Offices and Banks	Some recreational facilities such as ice rinks, gyms, field houses, exhibition buildings, fair buildings, etc.
Commercial Garages and Service Stations	Some warehouse facilities such as raw material storage, mini warehouses parking and vehicle storage, etc. ¹
Educational Complexes	Refrigerated Storage Facilities
Hospital and Treatment Facilities	
Churches	
Government Administration & Service	
Transportation Terminals	
Residential	
Some recreational facilities such as bowling lanes, theaters, museums, clubs studios, etc.	
Some warehouse facilities such as retail storage, food storage, parts distribution and storage, etc. ¹	

¹ $C_t = 1.1$ if building kept just above freezing.

15. What are collateral loads?

17 Collateral loads are a type of dead load. However, the only dead load we know is the weight of the metal building we are providing. We do not know what your sprinkler system or other items you might have hanging from the roof weigh. We need to know the weight of any lighting, ceiling, sprinkler systems, or other load inducing systems you have in your building.

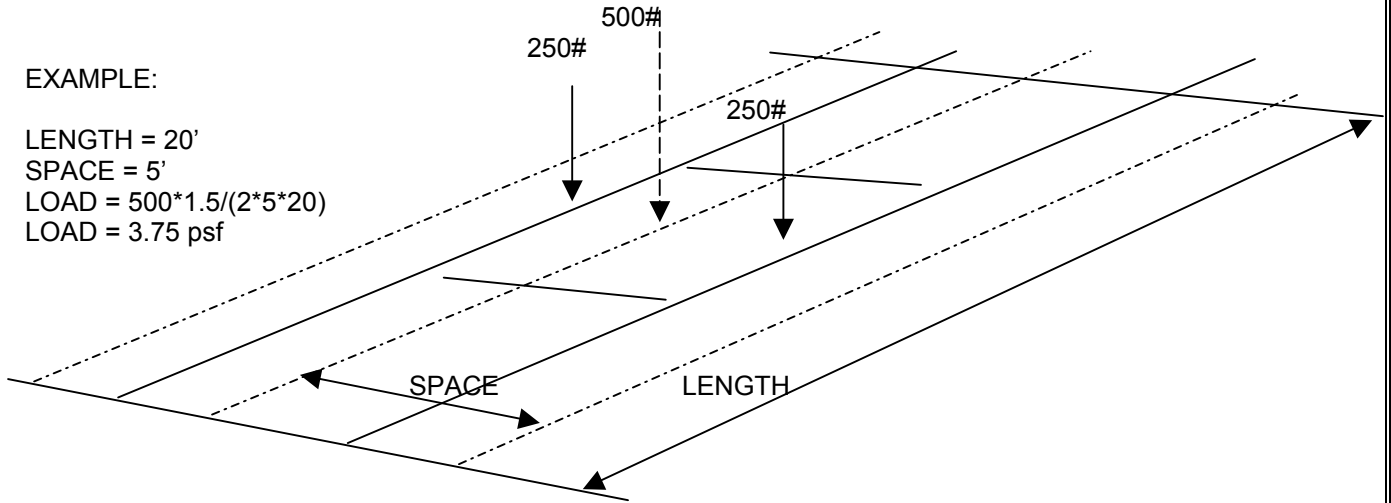
If a rooftop AC unit adds 500 pounds and may set on any two adjacent purlins, the equivalent uniform collateral load would be approximately:

$$\text{Load in psf} = 500 \text{ pounds} * 1.5 / (2 \text{ purlins} * \text{purlins space in feet} * \text{purlin length in feet}).$$

The 1.5 factor accounts for lapping of the purlins over a supporting frame. If it is a 1 bay structure, use 2 instead of 1.5.

EXAMPLE:

LENGTH = 20'
 SPACE = 5'
 LOAD = $500 \times 1.5 / (2 \times 5 \times 20)$
 LOAD = 3.75 psf



Typical Material Weights

Material	Collateral Load, psf
Vinyl-backed insulation	0.5
Rigid insulation	1.0
Lighting	0.5
HVAC ducts, office/commercial	1.0
Sprinkler system (wet)	3.0
Sprinkler system (dry)	1.5
Acoustical fiber tile ceiling	1.0
Gypsum board ceiling (1/2")	2.0
Gypsum board ceiling (5/8")	3.0
Plywood sheathing (5/8")	2.5
Plywood sheathing (3/4")	3.0

Table 14.1 gives other types of loads our Engineers need to know about. They are not all-inclusive, but they do affect the various types of buildings listed.

16. Heavy loads and how Spirco engineers design your building to hold them up.

18 The list of special loads in table 14.1 should be considered depending on your building use. We need to know where the loads attach to the building and the weights. We believe the best way to communicate this information is to locate the item on a plan of the building and to send us catalog information about specific equipment. We can't design for what we don't know about. The quality of your project depends on good information.

Table 14.1

3

**UNIFORM ORDER DOCUMENTATION
Special Loads to Consider**

NUMBER	CLASSIFICATION
1	<p>Commercial Storage of Agricultural Commodities</p> <ul style="list-style-type: none"> • Live loads and impact loads of stored commodities, i.e. cotton seed warehouse • Dead loads, live loads, and operating torques of screw conveyors- figure running full. • Impact loads of falling material • Dead loads, live loads and impact loads of trolley hoists hung from roof • Wind loads acting on attached bucket elevators
2	<p>Farm Structures</p> <ul style="list-style-type: none"> • Live loads and impact loads of stored commodities, i.e. corn crib, bulk feed bins • Dead loads, live loads, and operating torques of screw conveyors- figure running full. • Impact loads of falling material • Dead loads, live loads and impact loads of trolley hoists hung from roof • Live load of live weight beef if used for on-farm slaughter (1800 pounds)
2.A	On Farm Commodity Storage
2.B	<p>All other farm structures (barns, sheds, workshops)</p> <ul style="list-style-type: none"> • Seismic action on loft stored live loads • Live loads of lofts • Live load of trolley hoist in maintenance shed (2200 pounds)
3	<p>Manufacturing</p> <ul style="list-style-type: none"> • Internal pressure of explosion • Live load of explosion vent frame • Dead loads and seismic loads of rooftop ventilation units and combustion air make-up units • Dead loads of interior girt supported liner panels in high bay buildings • Heavy header supported air curtain structures at dock doors and interior bay line divider walls • Freezer panel dead loads and seismic loads if girt hung • Potentially heavier sprinkler systems at fire hazard or storage areas • Crane loads • Roof-hung unit heaters and fan coil cooling apparatus • Impact loads from forklift handling of loads near frames unprotected by ballards, concrete piers or similar devices • Impact loads of rack storage systems that are braced by attachment to rigid frame • Seismic loads of rack storage systems that are braced by attachment to rigid frame • Dead and seismic loads from main motor control centers attached to girts • Dead and seismic loads of cable tray and process piping racks hung from roof
3.A	<p>Production</p> <ul style="list-style-type: none"> • Roof-hung unit heaters and fan coil cooling apparatus • Impact loads from forklift handling of loads near frames unprotected by ballards, concrete piers or similar devices • Impact loads of rack storage systems that are braced by attachment to rigid frame • Seismic loads of rack storage systems that are braced by attachment to rigid frame • Dead and seismic loads from main motor control centers attached to girts • Dead and seismic loads of cable tray and process piping racks hung from roof
3.B	Warehousing/Vehicle Storage
3.C	<p>Equipment Service/Repair (except hangars)</p> <ul style="list-style-type: none"> • Dead and seismic loads of overhead lube systems, exhaust vents, etc. • Live and impact loads from trolley hoist or army hoist pulling engines

- 4 Commercial
 - 4.A Retail Stores
 - 4.B Warehousing & Storage
 - Impact loads from forklift handling of loads near frames unprotected by ballards, concrete piers or similar devices
 - Impact loads of rack storage systems that are braced by attachment to rigid frame
 - 4.C Hangars
 - Hangar door dead, impact and wind loads on jambs and headers
 - Live and impact loads from trolley or army hoists pulling engines and wing parts
 - 4.D Warehousing/Freight Terminals
 - Dead and seismic loadings of dock seals acting on door frames
 - Dead loads of air curtains, header supported dock doors
 - Impact loads from forklift handling of loads near frames unprotected by Ballard's, concrete piers or similar devices
 - Impact loads of rack storage systems that are braced by attachment to rigid frame
 - Dead loads of interior girt supported liner panels in high bay buildings
 - 4.E Offices & Banks
 - Collateral loads of HVAC, including coils, air handlers and units, acoustical ceilings, lighting, insulation, fire sprinklers, security camera installations, etc.
 - 4.F Commercial Garages & Repair Stations
 - Roof-hung unit heaters and fan coil cooling apparatus
 - Dead loads, live loads and impact loads of trolley hoists hung from roof
 - Dead and seismic loads of overhead lube systems, exhaust vents, etc.
- 5 Community
 - 5.A Recreational/Cultural/Assembly
 - Live, dead and impact loads (not reduced) for running tracks on cantilevered or attached mezzanine
 - Impact loads of roof and girt supported basketball goals
 - Dead and local seismic loads of scoreboards
 - Stained glass dead and seismic
 - Roof and girt supported cross or false lattice over sanctuary altar
 - Stage curtains
 - Purlin and girt supported sound systems
 - Special smoke vent structure on roof over stage
 - Roof supported vents over cooking areas
 - Proscenium air curtain or deluge shower fire protection system over stage
 - Bleachers attached to rigid frame
 - Organ or choir loft attached to rigid frame or endwall frame
 - Lighting/sound system catwalks hung from roof
 - Higher importance factor in seismic, wind and snow for assembly hall
 - 5.B Educational, including supporting facilities
 - Live, dead and impact loads (not reduced) for running tracks on cantilevered or attached mezzanine
 - Impact loads of roof and girt supported basketball goals
 - Dead and local seismic loads of scoreboards
 - Stage curtains
 - Purlin and girt supported sound systems
 - Special smoke vent structure on roof over stage
 - Roof supported vents over cooking areas
 - Proscenium air curtain or deluge shower fire protection system over stage
 - Bleachers attached to rigid frame
 - 5.C Hospital & Health Treatment
 - Increased collateral loads in vicinity of corridors for heavy HVAC, gas and fluid piping and

heavy duty electrical cable tray systems

- 5.D Houses of Worship, excluding schools/recreational
 - Stained glass dead and seismic
 - Roof and girt supported cross or false lattice over sanctuary altar
 - Stage curtains
 - Purlin and girt supported sound systems
 - Special smoke vent structure on roof over stage
 - Roof supported vents over cooking areas
 - Proscenium air curtain or deluge shower fire protection system over stage
 - Organ or choir loft attached to rigid frame or endwall frame
 - Lighting/sound system catwalks hung from roof
 - Higher importance factor in seismic, wind and snow for sanctuary
- 5.E Government Administration & Public Service
 - Verify importance factor for wind, seismic and snow
 - High occupant load for civil defense use may increase importance factors
- 5.F Transportation
 - Verify importance factor for wind, seismic and snow
- 5.G Residential/Lodging/Apartments/Residential Garages
- 5.H Correctional
- 6 Government for Export
- 7 All other

17. If an earthquake hits, will your building be OK?

21 22
23

Unless the building is tall, has a mezzanine floor, a crane system or heavy roof top equipment, the design typically is not controlled by earthquake loading. The governing codes tell us the factors we need to make sure your building stands. If loads are added, heavy storage racks are added later, or we are not given proper information about internal material weights, we may not be able to design the proper restraints. We need the seismic design factors, importance factors, and soil class / profile to determine the seismic loads on the building. We need to know the weight of any exterior walls, interiors walls, or additional materials to properly load the building. The following tables, can help you determine the soil class / profile.

23

SOIL CLASS / PROFILE

IBC	
Site Class	Soil Profile*
A	Hard rock
B	Rock
C	Very dense soil & soft rock
D	Stiff soil profile
E	Soft soil profile
F	Very soft, special requirements

- Code must be consulted for additional information. Data to determine soil profile type must be attained from site-specific investigation and testing.

NOTE: When soil properties are not known in sufficient detail to determine the site class, Site Class D shall be used unless the building official determines that Site Class E or F is likely to be present at the site.

SBC, BOCA		
Soil Profile	Description*	S
S ₁	Rock or less than 200' of stiff soil conditions overlying rock	1.0
S ₂	Greater than 200' of stiff soil conditions overlying rock	1.2
S ₃	20' to 40' of medium-stiff clay	1.5
S ₄	Soft clay	2.0

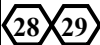
- Code must be consulted for additional information. Data to determine soil profile type must be attained from site-specific investigation and testing.

NOTE: When soil properties are not known in sufficient detail to determine the soil profile type or when soil profile does not fit any of the four types, use S₄, S=2.

UBC	
Soil Profile	Description*
S _A	Hard rock
S _B	Rock
S _C	Very dense soil & soft rock
S _D	Stiff soil profile
S _E	Soft soil profile
S _F	Very soft, special requirements

- Code must be consulted for additional information. Data to determine soil profile type must be attained from site-specific investigation and testing.

NOTE: When soil properties are not known in sufficient detail to determine the soil profile, type S_D shall be used in seismic zones 3 and 4, and type S_E shall be used in seismic zones 1, 2A, and 2B.



18. What do the Spirco engineers need to know if you want use something besides the standard metal roof?

Standing seam metal roofs and clay tile roofs are attractive or you may want to build your own plywood and shingle roof. Alternatively, you may want to add changes in roofline, dormers, overbuild accents and mansards or overhangs. We have to know all this information to properly design your building.

The information should include:

- Type, weights, and attachment of all material used
- Precise locations of hips, valleys and dormers
- Type of roof system, including manufacturer's data sheets
- Allowable loads and spans for material used

- Maximum allowable deflection/deformation allowed to prevent damage to the material

19. What kind of walls do you use?

24

We like to use flush girts on the endwalls of standard metal buildings. We like to use bypass girts on the sidewalls for economy. Drawings of the two types are shown on Figure 4. If you are mixing materials and construction types, you want to think carefully about the choice of flush or bypass girts.

If you use masonry or glass part of the way up a wall, you usually need bypass on that wall to keep a straight wall line. If you want to keep the tapered column from intruding into the interior, you may choose flush. If you mix flush and masonry on a wall, you will need to build out around the exterior of the column. Pages 19, 20 and 21 are additional information sheets for you to fill out in order for us to design the building so your walls will fit.

20. Why won't Spirco engineers design your slab and footings? If they won't, who will?

Our engineers will not visit the building site, in most instances. We don't know your local soils and local building practices. Our Engineers will only be responsible for design of the metal building. The foundation should be designed by a local Registered Professional Engineer, who knows the local soils and construction practices. Call a registered Civil Engineer or Structural Engineer. Do not ask someone who is not experienced in this kind of work to do the design. We will supply a set of permit drawings for the project, so that the Engineer can design a properly dimensioned foundation. These permits will give the foundation designer the information about the building they needs. You will need to give him locations of utilities, like plumbing, and locations for heavy machinery and special items to be embedded or cast into the floors.

21. Additional information so we know what you want.

19 20

25

Please fill out sheets A through E and figures 5 through 7 as they apply to your building. Always fill out sheet F for your building. Sheets A, B, and C tell us how we need to design your walls. If you are going to have a mezzanine now or in the future sheet D asks for the information, we need to design your building. If you are going to put a crane in your building sheet E provides the information we need to design what you want. Sheet F tells us what colors to use where on your building. Figures 5, 6, and 7 are to tell us about your building site so we can properly apply the snow and wind loads, which will affect your building. If you fill out these pages when you ask for a quote we will be better able to get you a more accurate quote and avoid most questions, not to mention you will have the information we need to design and detail your building.

Additional Information Sheet A Building with brick and stud walls

1. Is top of wall system supported by SPIRCO?

YES - Lateral support beam will be provided by SPIRCO.

NO - Lateral support beam will be provided by others.

What type of beam will you supply? _____

What will the beam weigh? _____ lbs/foot

How will you attach the beam to the structure? _____

How high is the top of the beam? _____

2. What are the deflection criteria?

SPIRCO – Spirco standard (Any material that is not listed in Spirco standard. The deflections limits must be provided.)

Customer – specify

Support member horizontal deflection L/_____ example: L/240

Frame horizontal drift H/_____ example: H/100

3. Are walls in girt line?

YES

NO

4. What is the weight of the wall system?

_____ psf

5. Please indicate which detail on the “Wall by Others Details” sheet is applicable and what is the total thickness. If none are applicable, please provide a detailed sketch.

Sidewall – Detail # _____ Wall Thickness _____”

Endwall – Detail # _____ Wall Thickness _____”

Additional Information Sheet B

Building with concrete masonry walls and tilt-up walls

6. Is top of wall system supported by SPIRCO?

- YES - Lateral support beam will be provided by SPIRCO.
- NO - Lateral support beam will be provided by others.
 What type of beam will you supply? _____
 What will the beam weigh? _____ lbs/foot
 How will you attach the beam to the structure? _____
 How high is the top of the beam? _____

7. What are the deflection criteria?

- SPIRCO – Spirco standard (Any material that is not listed in Spirco standard. The deflections limits must be provided.)
- Customer – specify
 Support member horizontal deflection L/_____ example: L/240
 Frame horizontal drift H/_____ example: H/100

8. Can walls be used as shear walls to resist horizontal loads?

- Yes Spirco will provide all loads imposed by the metal building components to be resisted by the shear wall.
- No See questions 4 thru 7

9. Can we place x-bracing in all walls?

- Yes
- No

10. Are walls attached to the steel columns?

- Yes
- No *What do they attach to? _____ Please provide sketch..*

11. Can we flange brace the columns to the walls?

- Yes
- No

12. If no x-bracing or shear walls are allowed and if walls are attached to the steel columns, it shall be noted that portal frames or other alternate bracing system will be much more flexible than the wall. Walls will have to yield (crack) before any load is resisted by the portal frame unless special connections are provided between the wall and the columns.

13. Are walls in girt line?

- YES
- NO

14. What is the weight of the wall system?

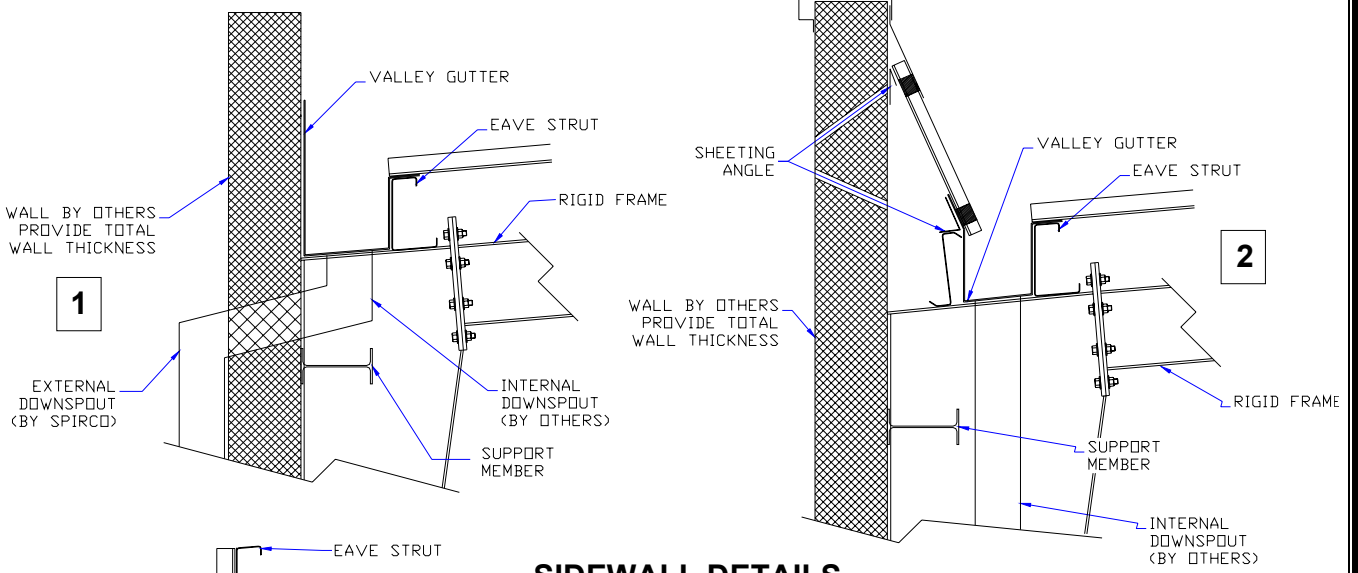
_____ psf

15. Please indicate which detail on the “Wall by Others Details” sheet is applicable and what is the total thickness. If none are applicable, please provide a detailed sketch.

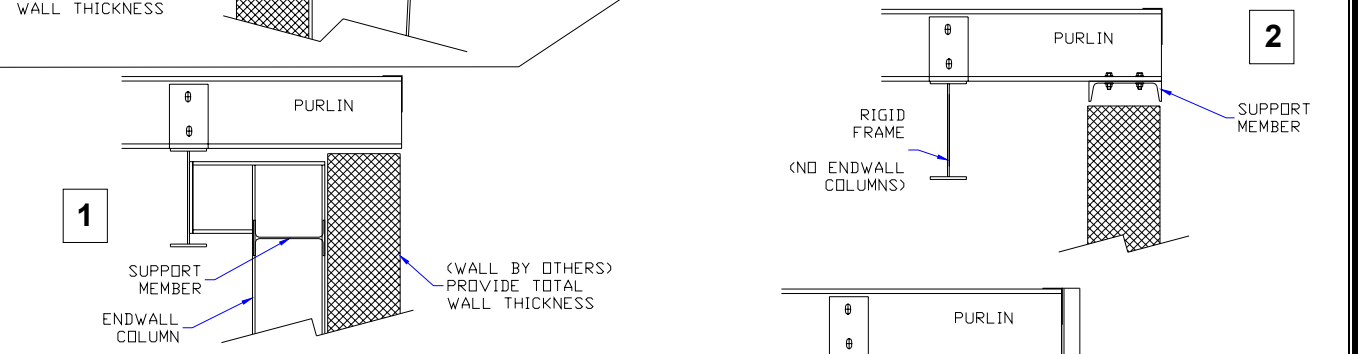
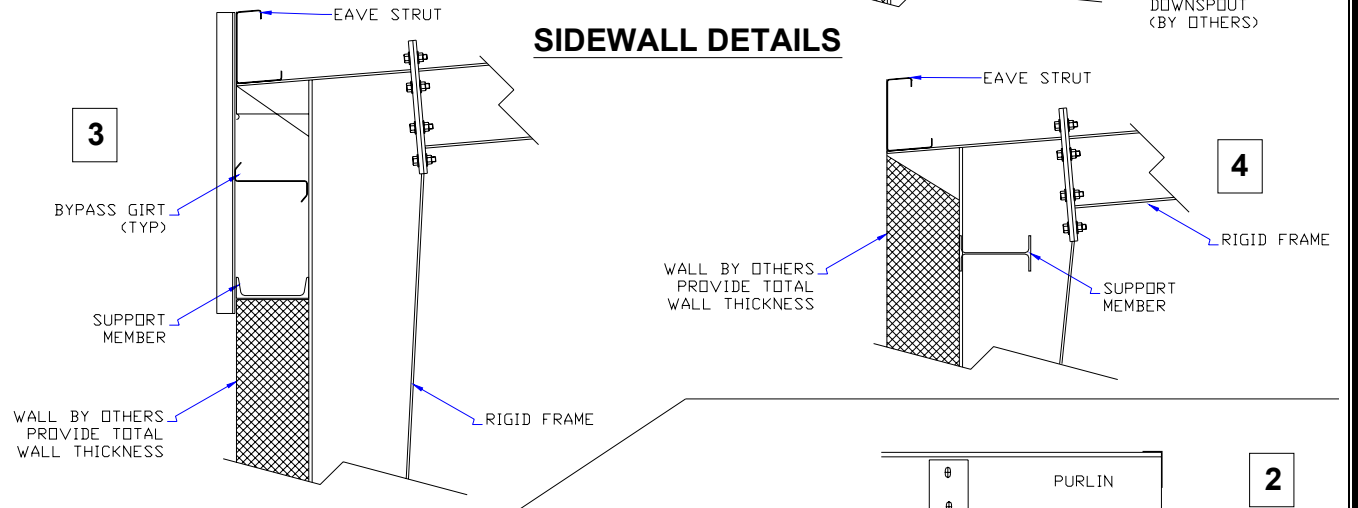
Sidewall – Detail # _____ Wall Thickness _____”

Endwall – Detail # _____ Wall Thickness _____”

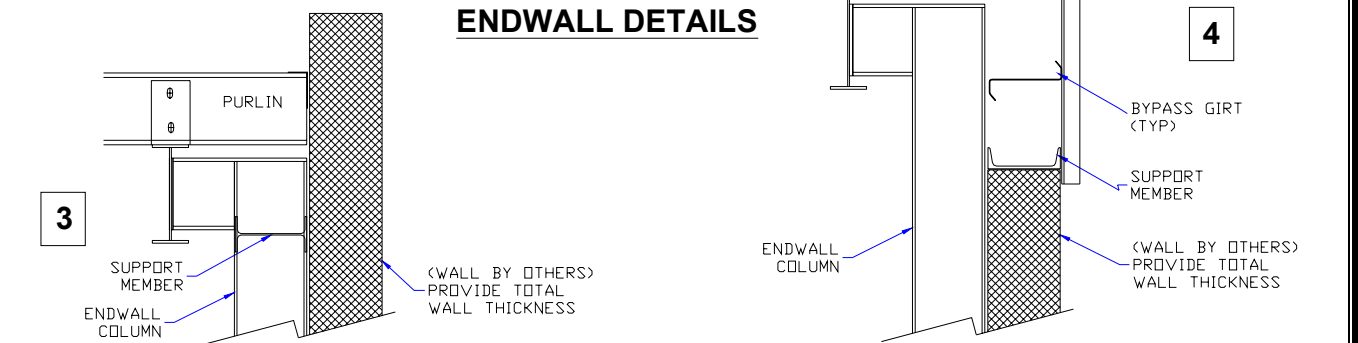
**Additional Information Sheet C
Wall By Others Details**



SIDEWALL DETAILS



ENDWALL DETAILS



Additional Information Sheet D Mezzanine Information

1. **What is the floor construction?**

Provide floor thickness _____ inches and weight _____ psf.

- Standard Concrete
- Plywood
- Lightweight Concrete
- Precast concrete

2. **What is the floor framing? It is preferred that SPIRCO determines the floor framing system, unless it specifically requested by the customer.**

- By Spirco
- Bar joists on steel beams
- Cold-formed sections on steel beams
- Steel beams on steel girders
- Other, specify _____

3. **Is live load special?**

- Yes - specify below
- No - see #4

4. **What is the mezzanine use?**

- | | |
|---|--|
| <input type="checkbox"/> Office | 50 psf, plus allowance for partitions _____ lb/ft* |
| <input type="checkbox"/> Light Storage | 125 psf |
| <input type="checkbox"/> Heavy Storage | 250 psf |
| <input type="checkbox"/> Fixed seats assembly | 50 psf |
| <input type="checkbox"/> No seats assembly (ballroom) | 100 psf |
| <input type="checkbox"/> Class rooms | 40 psf |
| <input type="checkbox"/> Corridors | 80 psf |
| <input type="checkbox"/> Other | ____ psf |

* Provide location of partitions on a sketch with contract.

5. **Are there any additional loads or concentrated loads?**

- Heavy equipment *Please sketch location and give operating weight, type &, capacity.*
- Masonry partitions *Please sketch location*
- Light partitions such as stud and drywalls or movable partitions *Please sketch location*
- File rooms *Please sketch location*
- Special equipment that may generate impact loads *Please sketch location*
- Collateral load

6. **What is the clearance below the Mezzanine? _____ Feet**

7. **What is the Clearance above the Mezzanine finished floor? _____ Feet**

8. **Is mezzanine framing by Spirco? (beams, joists, decking, perimeter angle)**

- | | | |
|------------------|------------------------------|---|
| Beams? | <input type="checkbox"/> Yes | <input type="checkbox"/> By Others – Specify Size _____ |
| Joist? | <input type="checkbox"/> Yes | <input type="checkbox"/> By Others – Specify Size _____ |
| Decking? | <input type="checkbox"/> Yes | <input type="checkbox"/> By Others – Specify Size _____ |
| Perimeter Angle? | <input type="checkbox"/> Yes | <input type="checkbox"/> By Others – Specify Size _____ |

A sketch is required for all mezzanines. It should indicate the location of the mezzanine in the building, the locations of all openings, and all point loads.

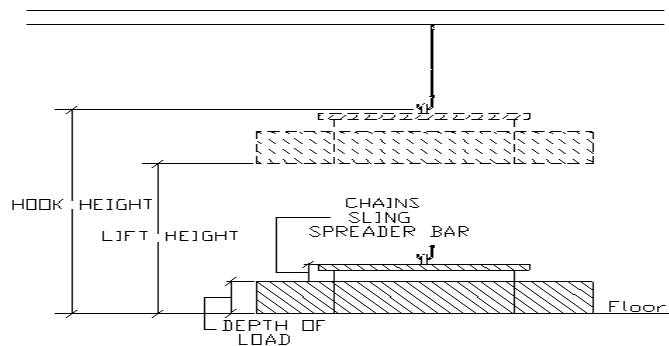
Additional Information Sheet E Building with Crane

Item	Information	UNIT
Crane type (example monorail, top running bridge)		-
Crane classification (example NCMA class D)		-
Cab or pendant operated		-
Crane capacity		Tons
Maximum wheel load w/o impact		Pounds
Wheel base		Feet
Bridge weight		Pounds
Hoist and trolley weight		Pounds
Runway rail weight (ASCE type)		#/Yd
Clearance from face of column to C.L. of rail		Inches
C.L. to C.L. of rails		Feet
Top of bracket elevation		Feet
Hook height (see below to determine height)		Feet
Number of cranes on the same runway		-
Distance between cranes if more than one		Feet
*Are runway beams and channel provided by Spirco?		-
*Are brackets provided by Spirco?		-
*Are auxiliary crane columns provided by Spirco?		-
*Is crane bracing provided by Spirco?		-
Location of crane system in building (sketch)		-

Provide data from crane manufacturer when available.

*If runway beams, cap channel, brackets, auxiliary crane columns, or crane bracing is not provided by Spirco. Sizes and details of attachment are required to properly design the building.

You can figure the hook height by adding the depth of the load plus the chains, sling, and spreader bar plus how high off the floor you are going to pick it up. See Sketch.



EXAMPLE: 2'-3" DEEP LOAD + 10" CHAINS + 8" SPREADER BAR + 18'-0" LIFT HEIGHT = 21'-9" HOOK HEIGHT

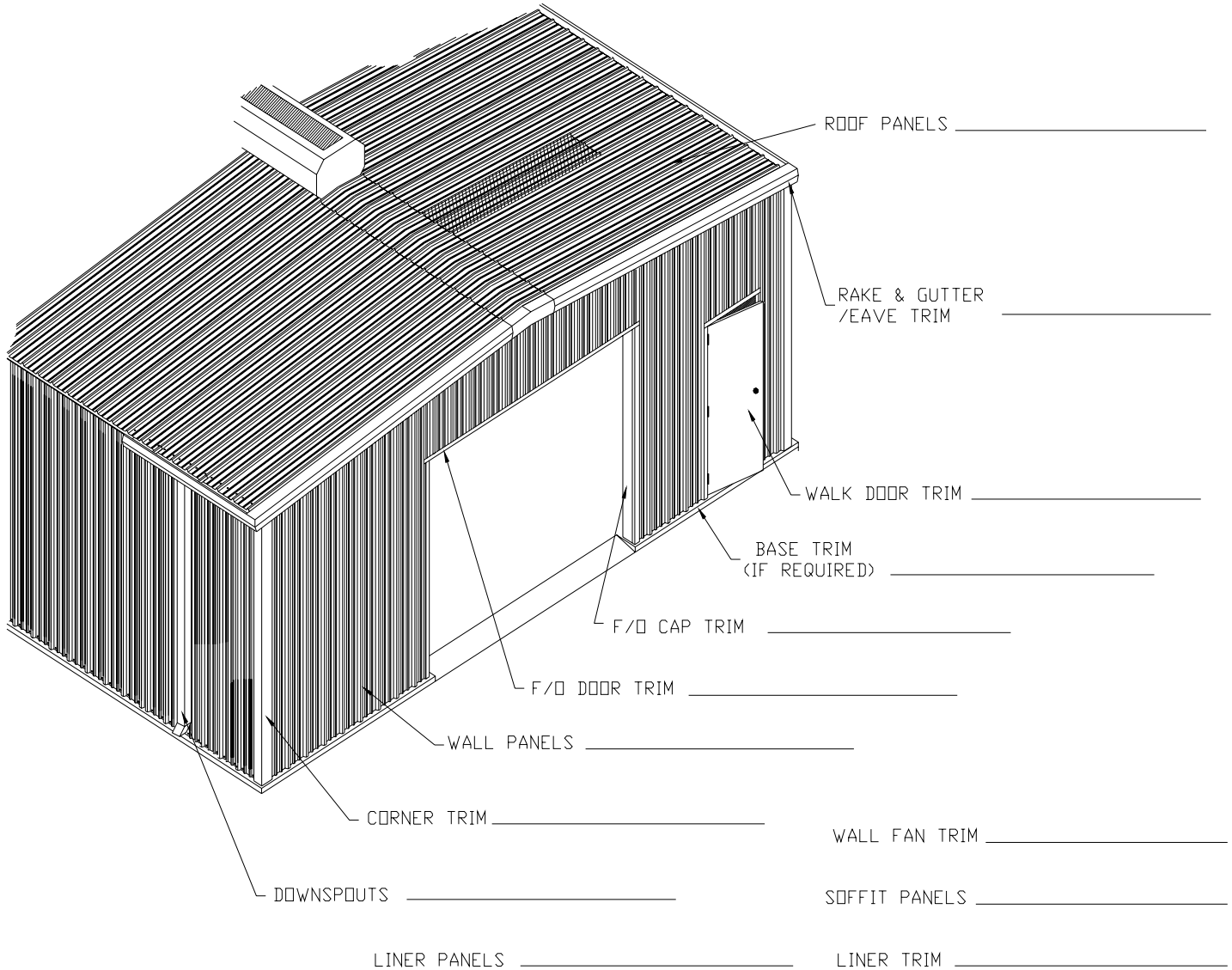


Additional Information Sheet F

BUILDING COLOR SELECTION SHEET

INSTRUCTIONS: Refer to the color chart to select the desired color scheme. Return a completed photocopy of this sheet as soon as possible so that the proper materials can be reserved for your project. Send this sheet back with your signed contract or return it to scheduling at number below.

FAX TO: (901)-363-7309
Attn: Scheduling



NOTE: Color chart approximates actual paint color

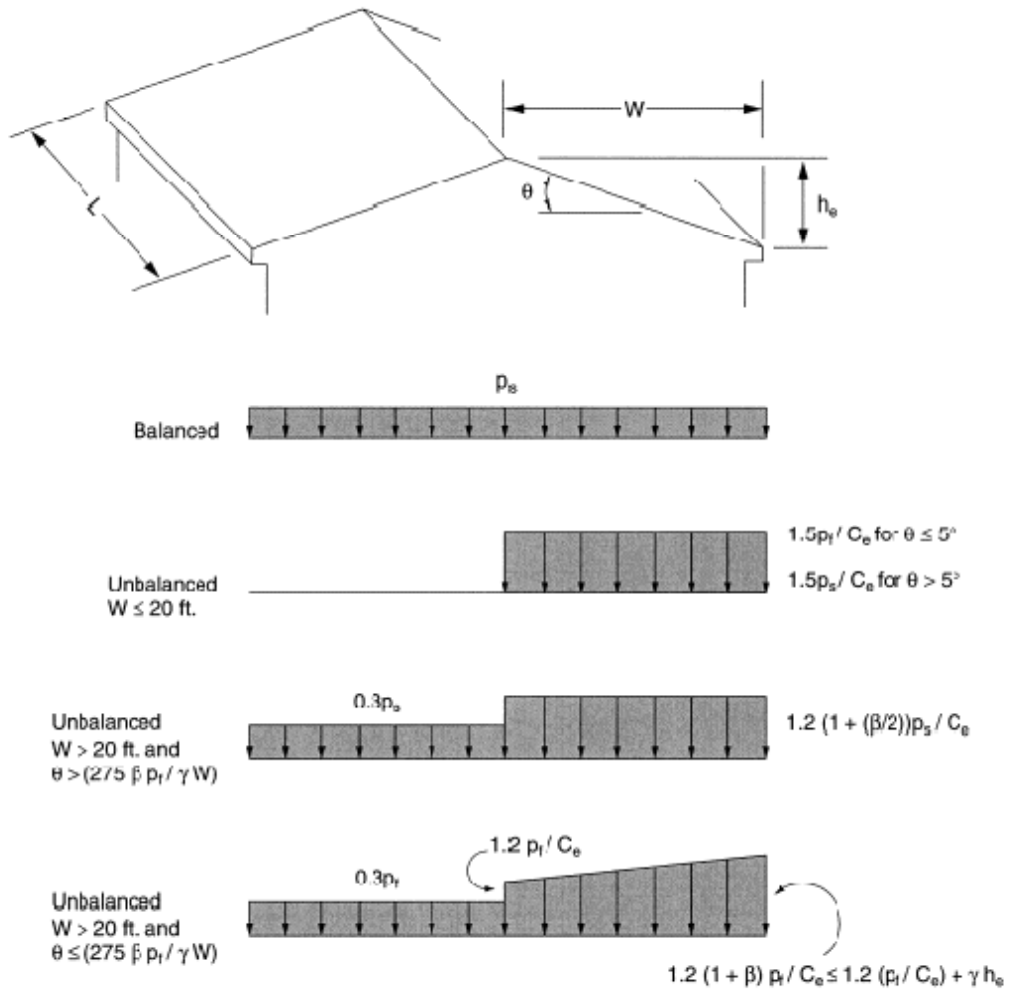
CONTACT: _____ @ () - _____ SPIRICO JOB NUMBER: _____

COMPANY: _____ JOB NAME: _____

APPROVAL BY: _____ SIGNATURE: _____ DATE: _____
(please print)

Figure 1A

UNBALANCED SNOW FOR IBC '00



Note: Unbalanced loads need not be considered for $\theta \geq 70^\circ$ or for $\theta < 70/W + 0.5$

FIGURE 7-5. Balanced and Unbalanced Snow Loads for Hip and Gable Roofs

Figure 1A-1

UNBALANCED SNOW FOR IBC '03

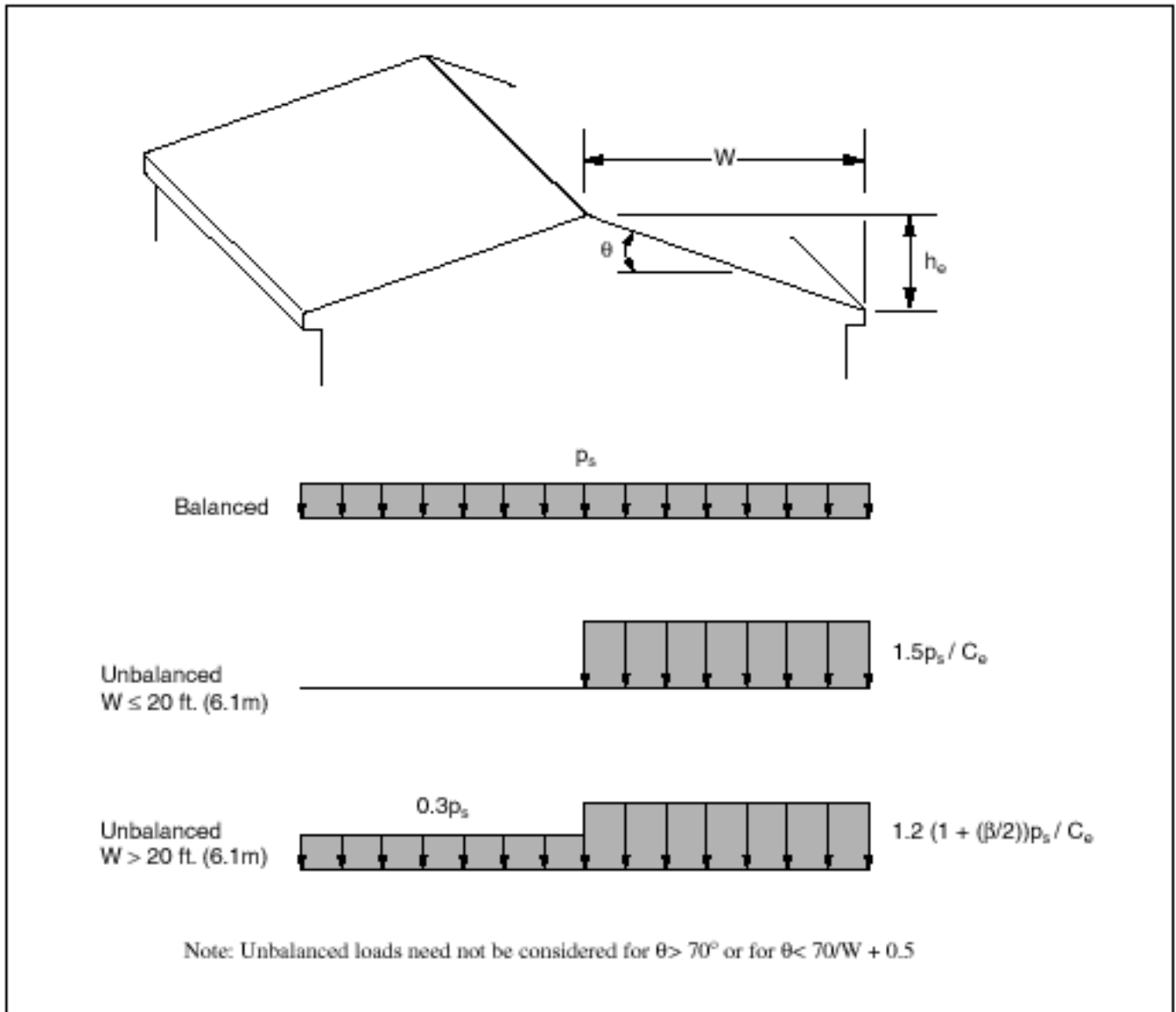
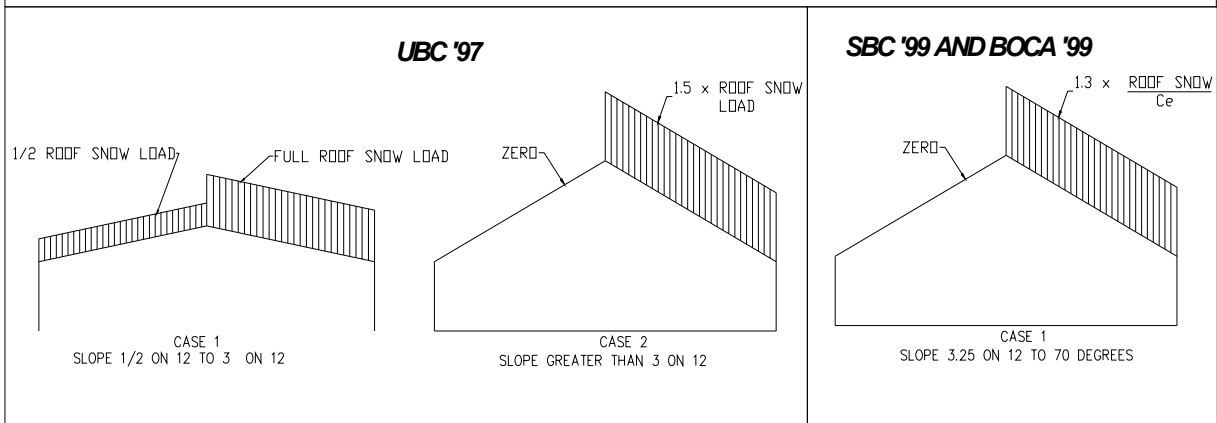


FIGURE 7-5
BALANCED AND UNBALANCED SNOW LOADS FOR HIP AND GABLE ROOFS

Figure 1B

UNBALANCED SNOW EXAMPLES



TYPICAL SNOW DRIFT EXAMPLES

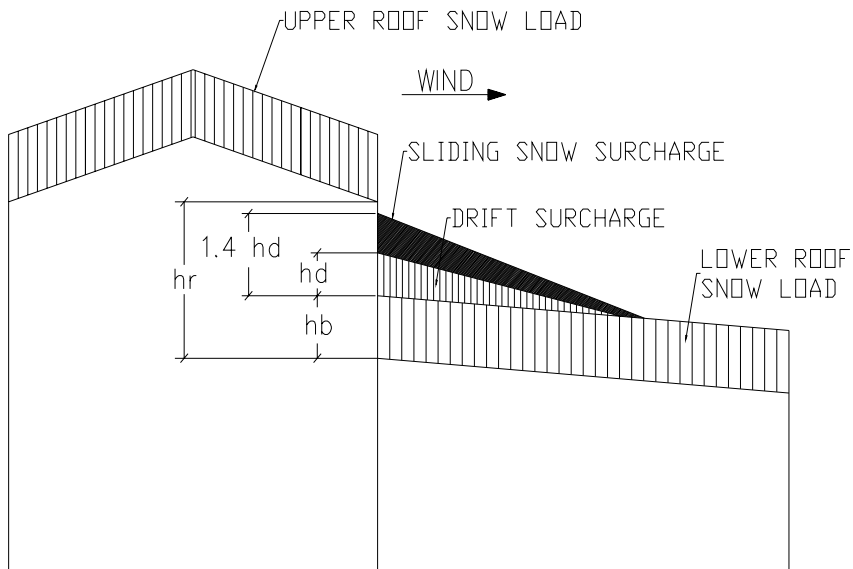
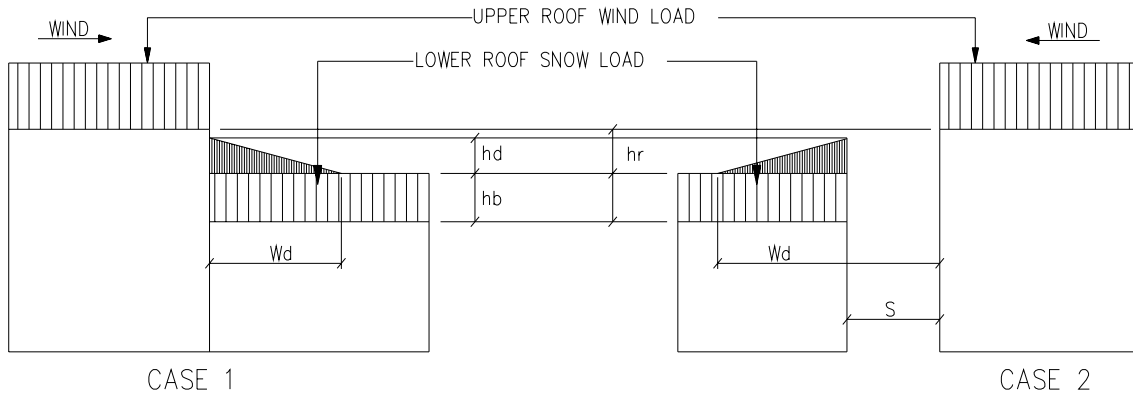
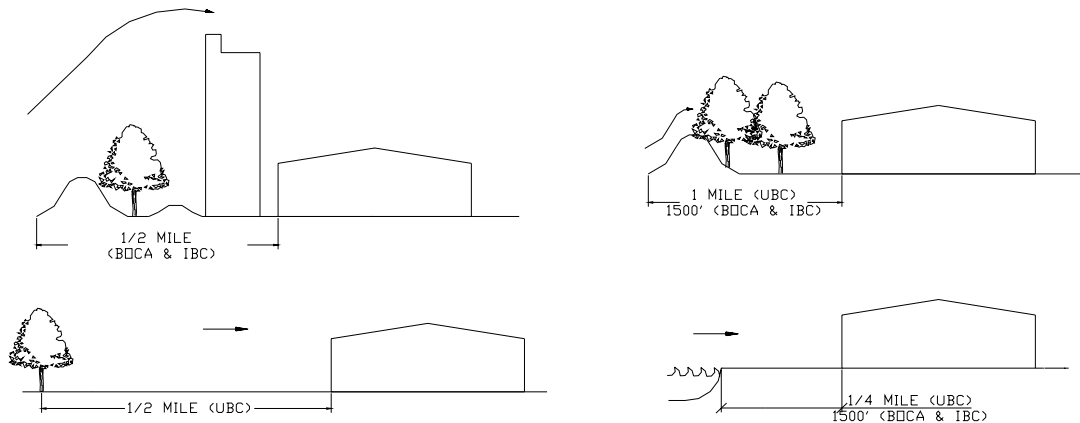


Figure 2

WIND EXPOSURE



Wind Exposure Definition:

Note: The definitions below are for BOCA and IBC '00. SBC does not designate an exposure. Exceptions are noted for UBC and IBC '03.

Exposure A – Large city centers with at least 50 % of the buildings having a height in excess of 70 feet extending at least ½ mile or 10 times the height of the building, whichever is greater are classified this exposure. This exposure does not apply to UBC or IBC '03.

Exposure B – BOCA and IBC '00 - Urban and suburban areas, wooded areas, or terrain with numerous closely spaced obstructions having the size of single-family dwellings extending a distance of 1,500 feet or 10 times the height of the building, whichever is greater are classified this exposure. IBC '03 states urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstruction having the size of single-family dwellings or larger. UBC states that this condition must occur for a distance of 1 mile and the ground must have 20 % coverage for the site to be classified this exposure.

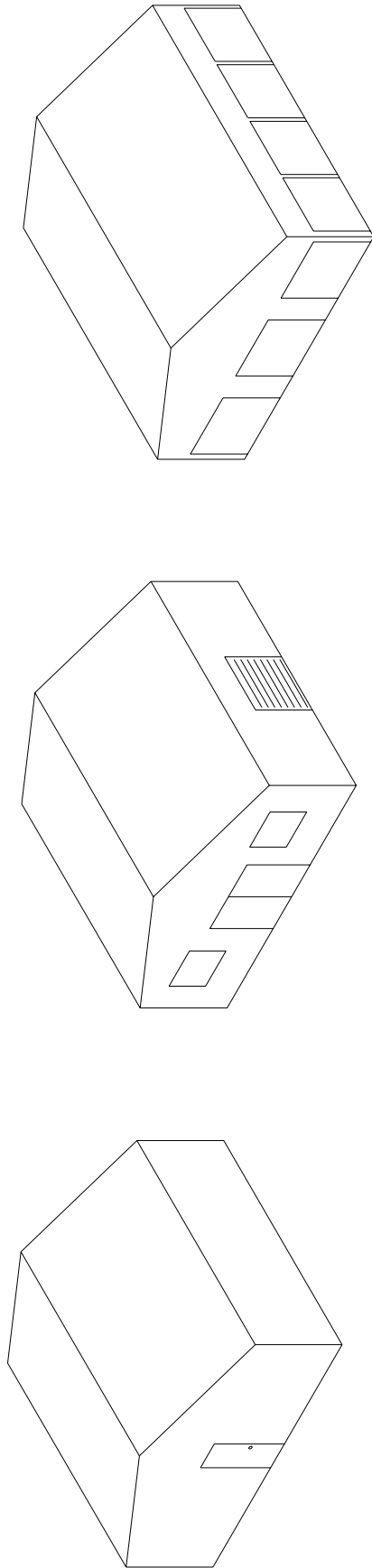
Exposure C – Open terrain with scattered obstructions having heights less than 30 feet are classified this exposure. UBC states that this condition must occur for a distance of ½ mile for the site to be classed this exposure. IBC '03 states that this condition must extend more than 1500 feet from the building site in any quadrant. This exposure shall also apply to any building located within Exposure B-type terrain where the building is directly adjacent to open areas of Exposure C-type terrain in any quadrant for a distance of more than 600 feet.

Exposure D – Flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane prone regions) for a distance of at least 1 mile are classified this exposure. This area extends 1,500 feet or 10 times the building height, whichever is greater. UBC states that this area extends ¼ mile or 10 times the height of the building, whichever is greater.

Additional Note:

IBC specifies that Exposure B shall be assumed unless the site meets the definition of another. General design practice is to use Exposure C for the other codes, unless the site meets the definition of another.

**Figure 3
Enclosure Type Guide**



CODE	ENCLOSED	PARTIALLY ENCLOSED	UNENCLOSED (OPEN)
UBC	SHEETED OR WIND RESISTIVE WALL & ROOF. ALL OPENINGS STAY CLOSED & RESIST WIND.	AREA OF OPENING $15\% \geq 1$ WALL AREA OF OPENING IN REMAINDER $1/2$ WALL OPENING	AREA OF OPENING $>85\%$ ALL WALLS
BOCA	DOES NOT MEET OPEN OR PARTIALLY ENCLOSED	AREA OF OPENING 4 SQ. FT. OR $1\% @ 1$ WALL & OPENINGS IN OTHER WALLS AND ROOF 20% OF AREA	ALL WALLS 80%
SBC	DOES NOT MEET OPEN OR PARTIALLY ENCLOSED	AREA OF OPENING $15\% \geq 1$ WALL OPENINGS EXCEEDS SUM OF OPENINGS IN ALL OTHER WALLS, & ROOF; AND OPENINGS IN ALL OTHER WALLS & ROOF $20\% <$	ALL WALLS 80%
ASCE7 IBC	DOES NOT MEET OPEN OR PARTIALLY ENCLOSED	1) THE TOTAL AREA OF OPENINGS IN 1 WALL EXCEEDS THE SUM OF OPEN AREAS IN ALL OTHER WALLS BY MORE THAN 10% AND 2) AREA OF OPENING 4 SQ. FT. OR $1\% @ 1$ WALL & OPENINGS IN OTHER WALLS AND ROOF $< 20\%$ OF AREA	ALL WALLS 80%

Figure 4
Girt Condition

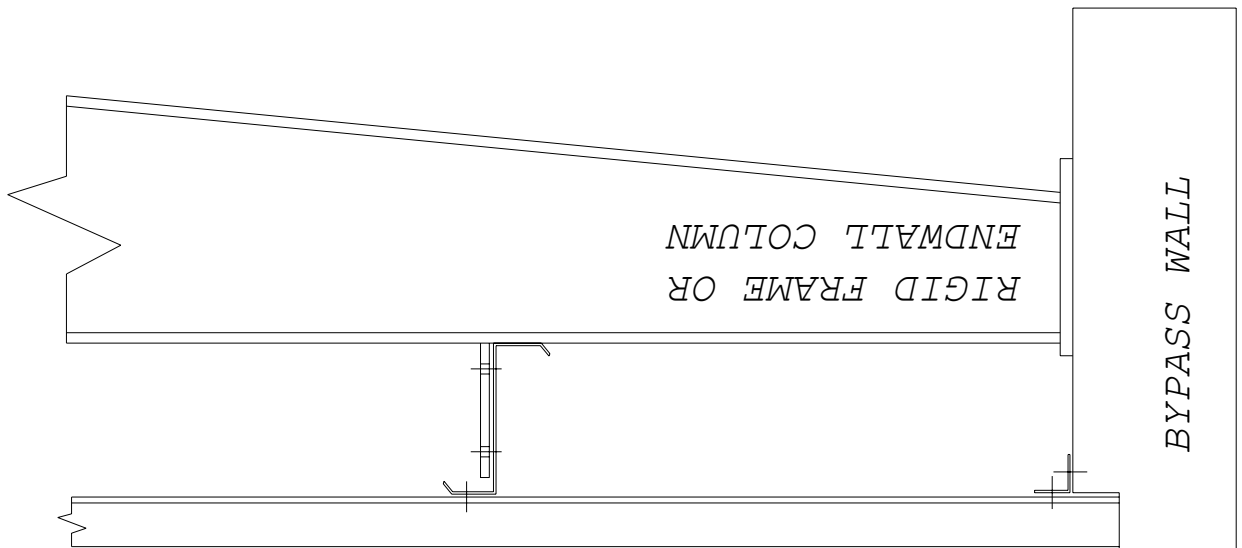
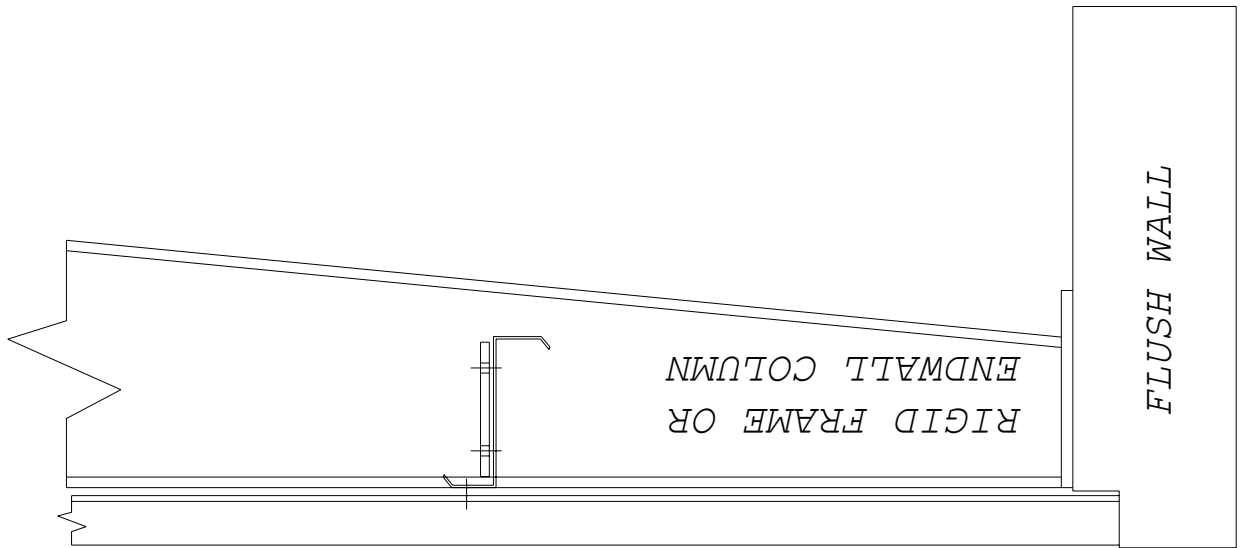


Figure 5
Obstructions

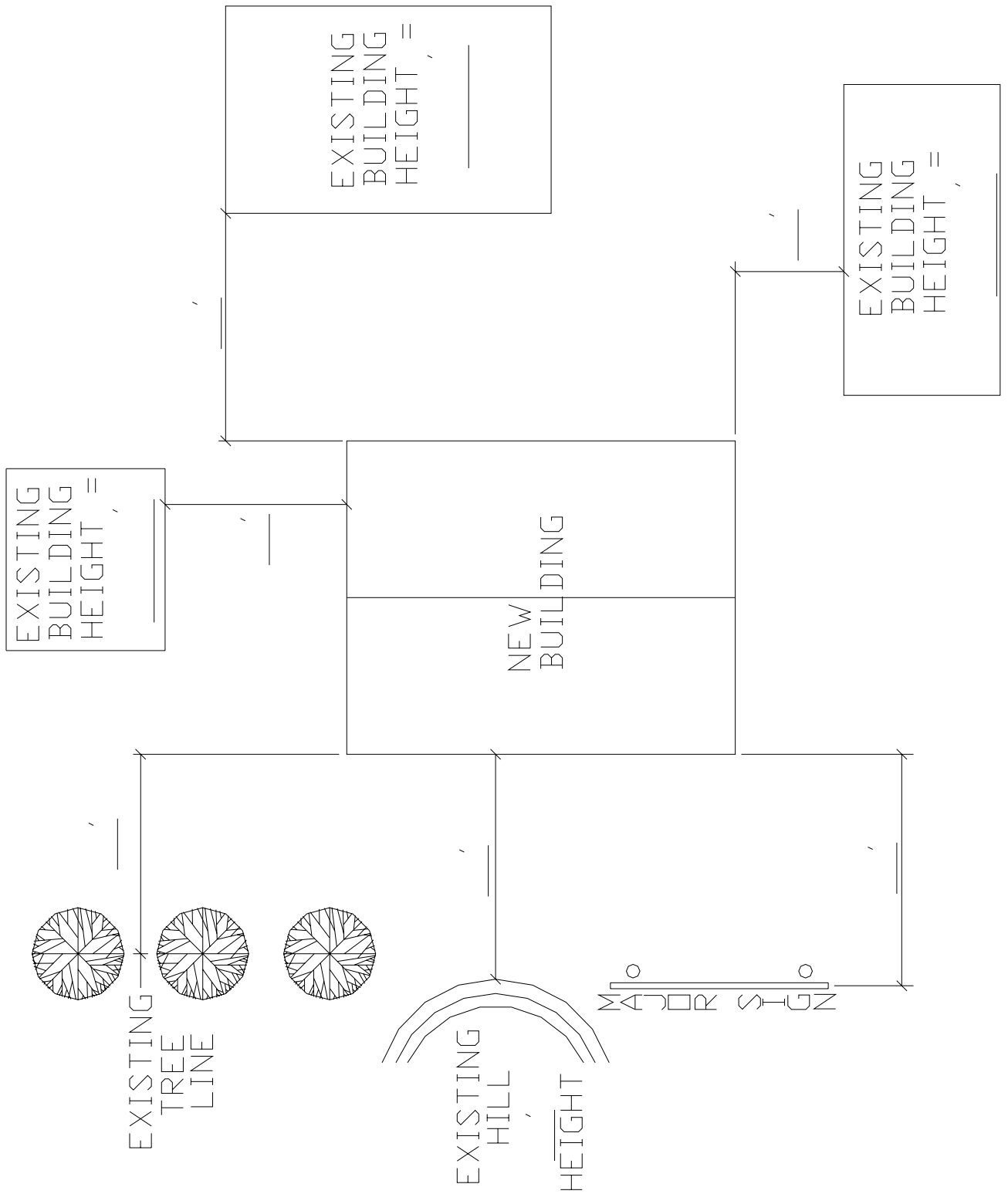


Figure 6
Buildings Near By

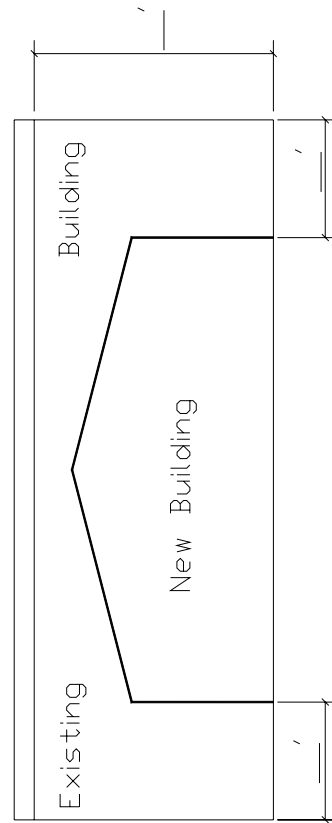
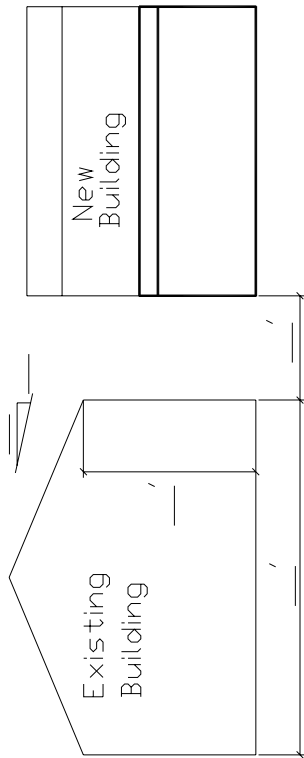
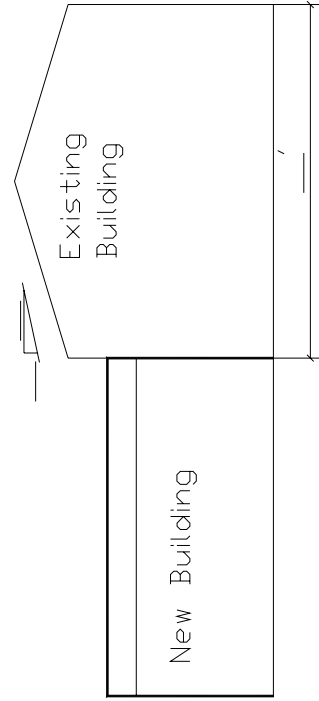
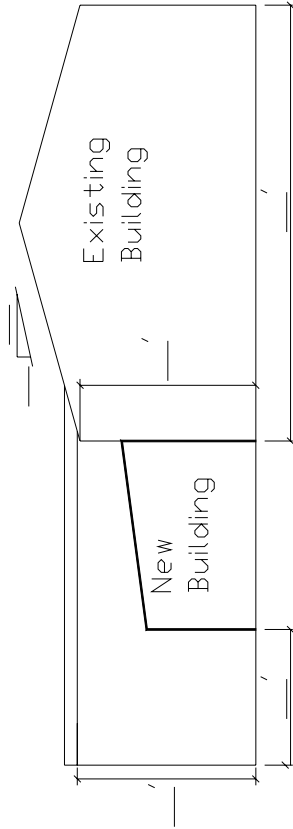
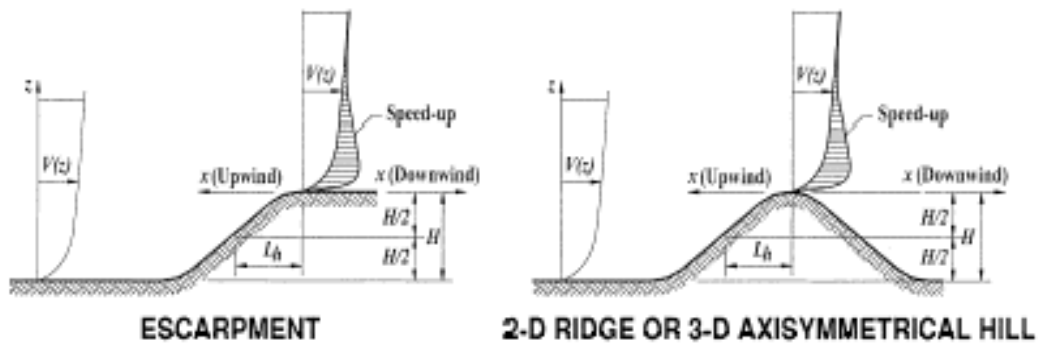


FIGURE 7

HILL OR ESCARPMENT DATA

If your building is located on the upper half of an isolated hill or escarpment, IBC may require your building to have an increased wind load. The term for this on the contract is topography effects. If the location of your building meets all the requirements given below then we must be provided with the information below.

- Requirements:
1. The hill or escarpment is 60 feet or higher in exposure B or 30 feet or higher if located in exposure C;
 2. The maximum average slope of the hill exceeds 10 percent; and
 3. The hill or escarpment is unobstructed upwind by other such topographic features for a distance
- from the high point of 50 times the height of the hill or one mile, whichever is less.



Selected one:

- Escarpment
- Hill

Provide Height (H) = _____ ft

Provide Distance L_h = _____ ft

Provide Distance x = _____ ft

Provide Distance z = _____ ft

H is the height of the peak of the hill or escarpment. L_h is the distance from the peak to a distance of H/2. x is the distance upwind or downwind from the peak of the hill or escarpment to the building site. z is the height above local ground level.

JOB NUMBER:
QUOTE NUMBER:
SALESPERSON:
COORDINATOR:



Spirco Manufacturing is a division of Metal Building Products, Inc.
Voice 800-886-6257; Fax 901-363-6795

Standard Building

GENERAL INFORMATION

CUSTOMER INFORMATION

CUSTOMER NAME: _____ **1**

CUSTOMER MAILING ADDRESS: _____

CUSTOMER PHYSICAL ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

ATTN: _____

PHONE: _____ FAX: _____

JOB INFORMATION

JOB NAME: _____ **2**

JOB ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

COUNTY: _____ USE: _____ **3**

END USER: _____

DRAWING ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

FINANCIAL INFORMATION

NET PRICE F.O.B. PLANT....\$ _____

FREIGHT.....\$ _____

TAX.....\$ _____

TOTAL PRICE.....\$ _____

DEPOSIT.....\$ _____

(Please mail if required)

*****TAX INFORMATION*****

STATE..... %

COUNTY..... %

CITY..... %

OTHER..... %

TAX BASE _____

TAX NUMBER _____

E-MAIL ADDRESS: _____

CUSTOMER Ref: _____

BUILDING LABELING: _____

OCCUPANCY: _____ **4**

Order Instructions Received

Release 02/23/2004

CONTRACTUAL INFORMATION

This order is subject to corrections in pricing by Spirco and is limited to the information contained on this order form and the building purchase order sketch form. Unless otherwise specifically noted, this order is based on the standard design, materials, and manufacturing methods described in the Spirco general specifications. No other information is to be considered in the design or manufacture of the building. All orders are subject to final approval by Spirco at its office in Memphis, TN.

Subject to credit approval and to the terms and conditions contained in this order, Spirco proposes to furnish the structure described in this order using Spirco standard material. The purchaser hereby accepts full responsibility for the payment of all applicable sales and use taxes due on this order. See terms and conditions on last page, which are a part of this contract. Sales tax note: sales tax will not be charged if we hold a valid Sales Tax Exemption Certificate at the time of order entry. If the sales tax rate has increased at the time of shipment or invoice, the new sales tax rate will apply. The prices, specifications, and conditions are satisfactory and are hereby accepted, subject to the terms set forth above and others attached to heretofore, you are authorized to do the work as specified, as outlined above. This contract not valid unless signed and accepted by an officer of Spirco Manufacturing.

ONCE THIS CONTRACT HAS BEEN ACCEPTED, THE MINIMUM CANCELLATION CHARGE WILL BE BASED ON THE AMOUNT OF WORK COMPLETED AND MATERIALS ORDERED BUT NOT LESS THAN THE GREATER OF 3% OR \$500.

SIGN HERE TO RELEASE FOR FABRICATION: _____

PAYMENT TERMS: **20 % Down, Balance COD (cashier's check)**

PURCHASER (COMPANY): _____ FEDERAL ID NUMBER: _____

AUTHORIZED SIGNATURE: _____ TITLE: _____ DATE: _____

PERSON CAPABLE OF LEGALLY BINDING COMPANY

ACCEPTED BY (For Spirco): DATE: _____

AUTHORIZED SPIRSCO REPRESENTATIVE

ORDER REQUIREMENTS

- WE WILL PROVIDE UP TO FOUR (4) SETS OF APPROVAL AND/OR PERMIT DRAWINGS. ADDITIONAL SETS ARE FURNISHED AT \$25 PER SET.
- PROJECTS REQUIRING APPROVAL WILL BE SCHEDULED FOR FABRICATION AND DELIVERY AFTER FINAL WRITTEN APPROVAL. NO DESIGN CALCULATIONS ARE FURNISHED UNLESS REQUESTED AT ADDITIONAL COST.
- ALL PERMIT DRAWINGS ARE SEALED AND ALL APPROVAL DRAWINGS ARE UNSEALED UNLESS REQUESTED OTHERWISE.
- DRAWINGS: 31
- Customer Quantity: _____ End User Quantity: _____

BASIC DESIGN INFORMATION

GOVERNING CODE AND EDITION: 5

Loads Supplied By: _____

ENCLOSURE TYPE	6
WIND LOAD/SPEED	7 Importance Factor: 8
WIND EXPOSURE	9 TOPOGRAPHY EFFECTS? IF YES PROVIDE FIGURE 7 10
LIVE LOAD	11 PSF REDUCIBLE? 12
SNOW LOAD	13 PSF
SNOW EXPOSURE	14 Heated? 15
SNOW IMPORTANCE	16
COLLATERAL LOADS	17 PSF <input type="checkbox"/> LTS <input type="checkbox"/> HVAC <input type="checkbox"/> CEIL <input type="checkbox"/> SPRINK <input type="checkbox"/> OTHER
AUXILLARY LOADS	18 PSF
CRANE LOADS	19 IF YES PROVIDE ADDITIONAL INFORMATION SHEET E
FLOOR LOADS	20 IF YES PROVIDE ADDITIONAL INFORMATION SHEET D
SEISMIC FACTORS	21
SEISMIC IMPORTANCE	22 SOIL CLASS/PROFILE 23

BUILDING DESCRIPTION

WIDTH.....	BUILDING TYPE:
LENGTH.....	BAY SPACING:
EAVE HEIGHT...	COLUMNS:
ROOF SLOPE....	SIDEWALL GIRTS: 24
INTERIOR COLUMNS	ENDWALL GIRTS:
RECESSED? DEPTH	STRUCTURAL COATING:
ROOF FASTENERS:	WALL FASTENERS:

SHEETING

BRACING

BASE CONDITION

- LEFT ENDWALL
- RIGHT ENDWALL
- REAR SIDEWALL
- FRONT SIDEWALL

IF WALL SYSTEMS ARE BY OTHERS PROVIDE ADDITIONAL INFORMATION SHEETS A OR B AND C. 25

LEFT ENDWALL COLUMN SPACING: TYPE:

RIGHT ENDWALL COLUMN SPACING: TYPE:

BASE CLOSURES: SHEET LEDGE:

IS THERE A STRUCTURE OR GEOGRAPHIC ANOMALY WITHIN 20 FT? 26 IF YES PROVIDE FIGURES 5 & 6

DEFLECTION REQUIREMENTS? 27 ANY MATERIALS NOT IN SPIRCO STANDARDS MUST HAVE DEFLECTION REQUIREMENTS FURNISHED ON THE CONTRACT.

GUTTERS & DOWNSPOUTS?

SHEETING

	TYPE	GAUGE	FINISH	UL90 CERT.	WRITTEN WARRANTY	RAKE TRIM CLOSURES
ROOF	28					
WALL				N/A		N/A

INSULATION:

	TYPE	THICKNESS
ROOF		
WALLS		

STANDING SEAM ROOF INFORMATION:

29

CLIPS:
 THERMAL BLOCKS REQUIRED?
 SEAMER?

STANDARD ACCESSORIES	Qty	NON-STANDARD ACCESSORIES	Qty

FRAMED OPENINGS

Factory located openings must be shown on the attached sketch.

QTY	SIZE	LOCATED	COVERS	QTY	SIZE	LOCATED	COVERS

DO DOORS AND/OR WINDOWS FURNISHED BY OTHERS PROVIDE WIND RESISTANCE PER CODE?

30

Additional Information

1. All provisions of the presently effective Dealer Buyer Sales Contract by and between the Dealer (Buyer) signing below hereof and Spirco Manufacturing (SM) (Seller) are, by this reference, incorporated in this purchase order as fully as if they were stated herein, and said provisions will become and be a part of the contract of purchase and sale when this order is accepted by Spirco.
2. TAXES AND ADDITIONAL CHARGES: All quotations and sales are subject to increases without notification by: (a) the amount of any sales, excise or other tax levied or charged by any governmental agency, (b) price adjustment necessitated by Seller's compliance with any governmental requirement, (c) the cost of any bonds required and/or (d) any surcharges levied by material suppliers or vendors after the execution of this contract. All sums accruing under (a), (b), (c) and (d) above will be added to the contract price and shall be paid by Buyer. Payment for additional work not included in the proposal but required by the Buyer shall be promptly made on the same basis as original sale.
3. DELIVERY: Buyer assumes full responsibility for furnishing Seller adequate roadways to the construction site. Seller will attempt to ship all orders on date requested, but cannot guarantee a specific delivery date. However, Buyer will be notified of the shipment date 1 week in advance unless otherwise agreed. **Upon delivery, it is Buyer's responsibility to unload the building within two hours. After two hours, charges will be paid by Buyer upon receipt of invoice from Seller.**
4. BUYER RESPONSIBILITY FOR ERECTION: It is Buyer's responsibility to select competent personnel to erect the structure for which Seller furnishes the materials and erection drawings. Buyer will indemnify and hold Seller harmless from and against any claims asserted against Seller on account of injuries to persons or property arising from faulty erection work.
5. CANCELLATION OR DELAY BY BUYER: It is understood Seller is a custom fabricator and that if Buyer cancels an order which has been accepted by Seller, Buyer shall pay for all work done and all materials purchased to fill Buyer's order and will also pay Seller's overhead and anticipated profit on the canceled order. In the event Buyer causes delay in completion and/or delivery of Seller's work, Buyer shall pay all additional costs resulting from the delay, including, but not limited to, cost for repairs, charges for storage on Seller's property or elsewhere, as determined by Seller. In the event Buyer causes delay, Buyer will immediately pay Seller's billing on account for work to date, plus overhead and profit thereon.
6. SECURITY INTEREST RETAINED BY SELLER: Buyer hereby grants to Seller a security interest in all materials delivered to Buyer under this contract and all such materials shall remain personal property of the Seller until all sums due Seller are paid, in full, by Buyer. Buyer agrees to execute financing statements and such other documents as Seller may reasonably require to protect its security interest. By accepting said security interest, Seller does not waive its mechanic or materialmen's liens, which are hereby expressly retained.
7. CERTAIN RIGHTS OF SELLER: If Buyer fails to fulfill the terms of payment, or if Seller has reason to believe Buyer will not make certain payments when due, Seller may, in addition to other rights as it may have, withhold further shipments until properly assured as to Buyer's ability to perform. No failure of Seller to exercise any right arising from any default of Buyer shall constitute a waiver of or impair Seller's rights in case of any subsequent default of Buyer.
8. GENERAL CONDITIONS: Seller's standard terms of payment are 20% down payment with order, the balance to be paid by cashier's check upon delivery. Any deviation from these terms shall be subject to approval of Seller's Credit Department. Credit terms, if granted, are to be determined by the Credit Department after completion of the necessary documentation and a credit check. Deductions for retentions are not allowed. Deductions for sales tax shall only be permitted when Buyer has presented documentation as required by the individual States and/or local taxing jurisdictions. Any payments deferred after the due date as specified herein shall bear interest at the rate of eighteen percent (18%) per annum. If an invoice is placed in the hands of an attorney for collection, or if collected by any legal proceedings, Buyer agrees to pay Spirco its reasonable attorney fees and costs incurred in the collection of sums owed by Buyer to Spirco on account of principal, interest, or other charges.
9. LEGAL DESCRIPTIONS: Seller is fully authorized at anytime to fill in and insert the legal description of the real estate upon which the materials being furnished by Seller per this contract are to be located.
10. MATERIAL TO BE FURNISHED: This contract covers only items specifically set out in the building purchase order. In the event of conflict between drawings and the building purchase order, only material listed in the building purchase order will be furnished. All materials furnished are to be governed by Spirco specifications only, and any variance or deviation must be so stated on the building purchase order. All other material furnished will be at extra charge.
11. MBMA MANUAL: The Metal Building Manufacturer's Association "LOW RISE BUILDING SYSTEMS MANUAL," current edition, is part of this contract as though fully set forth herein. By execution of this Contract, Buyer acknowledges receipt of this code and complete familiarity with the contents thereof.
12. SHORTAGES, DAMAGES, AND BACK CHARGES: If, in the opinion of the Buyer, any material is damaged prior to receipt by Buyer to a degree that will prevent use of such material with minor field repair, delivery of damaged material shall be refused by Buyer, noted by item on shipping documents as "damaged" and returned on delivering truck to Seller or to common carrier. Under no circumstances shall damaged material which cannot be used with minor field repair be unloaded at jobsite. Seller shall not be liable for the correction of errors in design, detailing, manufacturing or shipping if Buyer does not strictly comply with the provisions MBMA "LOW RISE BUILDING SYSTEMS MANUAL," governing the correction of errors and repairs, and material count, Seller shall not in any event be liable for labor charges or consequential damages arising from the use of defective materials. It is further agreed that no back charges or offsets of any kind will be accepted by Seller unless agreed to in writing. Seller's only liability for shortages will be furnishing of said shortages. All shortage and/or claims must be reported no more than 7 days after delivery. **No back charges will be accepted for delays, equipment costs, or corrective actions unless agreed to, in writing, in advance of charges being incurred. Buyer must provide receipts and documentation to validate all work was performed, and/or materials were purchased.**
13. WARRANTY: Seller makes no warranties of any nature whatsoever except that Seller's materials and/or work are warranted in accordance with warranties that are a part of this contract and are requested by Buyer at the time of the order. All other warranties of any nature whatsoever including but not limited to warranties of merchantability and fitness to purpose, express or implied, by operation of law or otherwise are excluded from this contract. Seller's liability is limited as set forth on the warranties, if any, mentioned on the face of this contract and Seller shall not be liable for any other damages whether direct or consequential, incidental, exemplary, liquidated, or punitive including loss of use which may be suffered by Buyer. Seller shall comply with specifications governing material workmanship, design procedure and design loads which are expressly provided in the building purchase order. Materials or workmanship sold hereunder for which specifications are not expressly provided in the building purchase order shall be subject to Seller's standard variances, tolerances, and specifications current as of the building purchase order date. Any alterations to building system will void all warranties and we will assume no liability for altered building systems.
14. CODE COMPLIANCE: Buyer agrees that it will be his responsibility to see that any building ordered from Seller meets local codes or regulations. Seller guarantees only that the buildings will meet specific loadings from models outlined in the building purchase order. Seller reserves the right to change design or make structural substitutions which do not materially affect the strength of the buildings covered under the building purchase order.
15. SEPARATE SHIPMENTS: Seller reserves the right to divide this contract into separate shipments and invoice such shipments separately, in which case each shipment shall be deemed a separate contract and payment thereof due in accordance with the terms hereof. Seller will not be responsible for spotting, switching, drayage, demurrage, or other transportation unless agreed to in writing on the reverse hereof. If because of default of Buyer, any shipment must be delivered or returned to Seller, Buyer shall pay all demurrage, transportation and other costs incurred as a result thereof.
16. PICTURE RELEASE: In signing this contract, Buyer gives Seller permission to use any visual representations of the above specified project in any way Seller wishes.
17. **IT SHALL BE THE FULL RESPONSIBILITY OF BUYER TO CAREFULLY CHECK ORDER ACKNOWLEDGMENTS IMMEDIATELY UPON RECEIPT AND TO NOTIFY SELLER OF ANY DISCREPANCY.**
18. Spirco Manufacturing shall not be held responsible for any delays or cancellations due to strikes; riots; acts of God; shortages of materials or labor; war; governmental laws, regulations, or restrictions; financing; or any cause whatsoever beyond their control.
19. Spirco Manufacturing is a division of Metal Building Products, Inc (a Tennessee Corporation) . Any matters requiring adjudication shall be heard in the appropriate division of Tennessee Courts in Memphis, Tennessee. Buyer consents to the jurisdiction and venue of the courts of Shelby County, TN and Buyer agrees that all actions will be brought in that forum.
20. ENTIRE AGREEMENT: This writing is intended by the parties as a final expression of their agreement, and it is intended also as a complete and exclusive statement of the terms of their agreement. It is specifically understood and agreed that Seller shall have no liability whatsoever under any contract between Buyer and other parties, unless Seller agrees thereto, in writing, at the time of acceptance of the approval.

Explanation of Contract

Note: To help avoid input errors start with a blank contract each time.

Heading, Front Page: (Completed by SPIRCO)

Job Number: A job number will be assigned to your contract upon signing and entering the contract into our system.

Quote Number: This is the number assigned to your project by our Estimating Department when the project was estimated.

Salesperson: This District Manager handles your account.

Coordinator: This Sales Coordinator handles your account.

General Information (Completed by the Buyer)

Customer Name: This is the Company Name of the buyer of this building project.

Customer Mailing Address: This is the mailing address of the buyer. Required for all drawings and other materials mailed to the buyer from SPIRCO.

Customer Physical Address: This is the physical address of the buyer. This is also required and is used for any materials sent overnight to the buyer by SPIRCO.

City: The buyer is located in this city.

State: The buyer is located in this state.

Zip: The buyer is located in this zip code.

Attn: This is the contact person who is responsible for handling the project. All items mailed or sent from SPIRCO will be to this person's attention.

Phone: Phone number including area code of the buyer.

Fax: Fax number including area code of the buyer.

Shipping Information (Completed by the buyer)

Job Name: This is the name of the project usually designated by the end user.

Job Address: This is the physical address of where the building project will ship.

City: This is the city of the building project ship-to location.

State: This is the state of the building project ship-to location.

Zip: This is the zip code of the building project ship-to location.

County: This is the county of the building project ship-to location.

Use: This is the exact category describing the building use of this project.

End User: This is the name of the end user, who will own the building.

Drawing Address: This is the address of the end user. This is also required and is used for any materials mailed or sent overnight to the end user by SPIRCO.

City: The end user is located in this city.

State: The end user is located in this state.

Zip: The end user is located in this zip code.

Financial Information: (Completed by SPIRCO)

Net Price F.O.B. Plant: This is the price of the building project less freight and taxes.

Freight: This is the cost of shipping your project to the ship-to location. This is often shown as "included" if SPIRCO will be shipping the project.

Tax: This is the total amount of taxes charged to this project. Just below this area, you will see a heading of "Tax Information". This will show you a breakdown of the taxes. When a customer is tax exempt, this will show "exempt". If the customer is not exempt and SPIRCO does not collect the required taxes, "by others" will be shown.

Total Price: This is the total price of the project, including taxes and freight.

Deposit: This is the amount of the deposit you will need to mail to SPIRCO. The amount of the deposit depends on the payment terms the buyer has been approved. It is important to mail in your deposit as soon as possible, because your project will not go to fabrication until the deposit has been received.

Tax Information: This is the breakdown of all applicable taxes required on the building project. There is a location for all tax-exempt customers to write in their tax number. A copy of your tax exemption is required to be mailed in as soon as possible.

E-Mail Address: The buyer's address where any needed e-mail communications should be sent.

Building Labeling: Specify if this building will show SPIRCO logos or Private Label logos.

Occupancy: Specify what occupancy category this building is.
Order Instruction Received: Check this box if you have our latest order instructions if not call your salesperson and they will get you a copy.

Contractual Information

Release for Fab: Sign here to release your building for fabrication. Without this signature, your project will be unable to be released to production.
Payment Terms: These are the payment terms assigned to the buyer. Other terms are available and can be granted upon receipt of our Credit Application and Personal Guarantee. Standard payment terms are 20% down payment, and the balance COD (Cashiers Check).
Purchaser: This is the company name of the buyer purchasing the project. The name should be the same as the "Customer Name" located under the "General Information" heading.
Federal ID Number: If the company purchasing the project has been assigned a Federal ID Number, please write the number in this location.
Authorized Signature: This is the signature of the person who is an authorized agent of the buyer to purchase this project from the seller.
Title: This is the title of the authorized purchaser.
Date: Specify the date on which you signed this contract.
Accepted by: This is the signature accepting the contract by an approved representative of SPIRCO.
Date: This is the date of the contract's acceptance by SPIRCO.

Order Requirements:

This is where we communicate what type of drawings SPIRCO will provide for the project. However, other options are available. For each set of sealed permit drawings one sealed Letter of Certification will be provided. See "Explanation of Drawing Requirements" for more information.

Drawings: Please specify the type of drawings you require and specify whether you need the engineer to seal the drawings.
Customer Quantity: Specify the quantity of drawing sets the customer is to receive.
End User Quantity: Specify the quantity of drawing sets the end user is to receive.

Basic Design Information: (Refer to the Order Instructions for clarifications)

* References below to "local code" are to the governing code at the ship-to location.

Governing Code And Edition: This is the local building code and edition specified by the code authorities where the building will be located.
Enclosure Type: Specify if the building is enclosed, open, or partially enclosed as defined on figure 3.
Wind Load/Speed: Specify wind load/speed (psf or mph) according to local code.
Importance Factor: This is a factor applied to the wind load according to the building use.
Wind Exposure: Specify wind exposure according to local code. For SBC this is not applicable, but all other national codes should have the wind exposure specified as defined on figure 2.
Topography Effects: If the building is on a hill as described on figure 7 we need this information.
Live Load: Specify the live load and note if a reduction is allowed to the frames or if there is no load reduction allowed.
Snow Load: Specify the snow according to local code and indicate if it is ground snow or roof snow.
Snow Exposure: Specify the snow exposure according to local code. The options are fully exposed, partially exposed or sheltered. Tell us if the building is heated. See section 14 of these instructions for a further explanation.
Snow Importance Factor: Specify the importance factor according to local code.
Collateral Loads: Specify the collateral loads needed to support any added items, which will be attaching in any way to the roof.
Auxiliary Loads: Specify any auxiliary load needed to support any items supported by the project.
Crane Loads: Specify all applicable crane loads and give description of the type of crane. The location will be shown on the building sketch. It is advised that the crane loads come from the manufacturer of the crane. Provide Additional Information Sheet E.
Floor Loads: Specify any floor loads, which will be attaching to the building project in any way. Location and description will also be required. Provide Additional Information Sheet D.
Seismic Factors: Specify these seismic factors according to the code. For SBC and BOCA provide Aa and Av. For UBC provide seismic zone. For IBC provide Ss and S1.

Seismic Importance: This is a factor applied to the seismic load according to the building use.
Soil Class/Profile: This is the building site's soil type or conditions. This is used to determine the seismic loads on the building. See section 17 of these instructions for further explanation.

Building Description:

Width: Specify the nominal width of the building.
Length: Specify the nominal length of the building.
Eave Height: Specify the height from finished floor to the top of the eave strut. (Sidewall)
Roof Slope: Specify the roof slope of the building.
Interior Columns: Specify how many interior columns are desired on each mainframe line and the type desired. Spirco's standard interior column is pipe.
Recessed: Specify if the interior columns are to be recessed below the finished floor and how far.
Roof Fasteners: Specify what type of roof fasteners are to be used.
Building Type: Specify the type of building: Gable, Single-Slope, Lean-To, or other
Bay Spacing: Specify if the sidewall bay spacing is "uniform" (equal) or "non-uniform". Show the sidewall spacing on the building sketch.
Columns: Specify "straight" or "tapered allowed" sidewall mainframe column shapes
Sidewall Girts: Specify if the sidewall girts are flush or bypass.
Endwall Girts: Specify if the endwall girts are flush or bypass.
Structural Coating: Specify the type and or color of the structural coating
Wall Fasteners: Specify what type of wall fasteners are to be used.
Sheeting: Specify if the specific wall is solid sheeted, open, or partially sheeted at each wall location shown.
Bracing: Specify "X-Bracing Allowed" or "Alternative Bracing". You may not be allowed to x-brace, and may note other bracing options. Specify the bracing at each wall location shown.
Base Condition: Specify the base condition on each wall location shown. This includes base angle, base girts, formed base trim, etc.
Left Endwall Column Spacing: Standard or See Sketch. Standard means the engineer will space the columns to provide the best design. See Sketch means the customer is specifying the column spacing on the building sketch. From left to right, facing the endwall, specify the column spacing.
Type: Specify the type (post and beam, rigid frame, or no frame) of the left endwall. Ask your salesperson for explanation of type's if not known.
Right Endwall Column Spacing: Standard or See Sketch. Standard means the engineer will space the columns to provide the best design. See Sketch means the customer is specifying the column spacing on the building sketch. From left to right, facing the endwall, specify the column spacing.
Type: Specify the type (post and beam, rigid frame, or no frame) of the right endwall. Ask your salesperson for explanation of type's if not known.
Base Closures: Specify "Yes" or "No" for base closures. If the building is not insulated, base closures are sent as a standard feature.
Sheet Ledge: Specify "Standard" for Spirco's standard sheet ledge of 2" x 1 1/2" or specify what type of sheet ledge is required.
Is there a structure or geographic anomaly within 20 ft? Please specify either "Yes" or "No". If yes, additional information on the existing structure may be required and you will need to show the location on the building sketch. Provide figures 5 and 6.
Deflection Requirements? Specify any non-standard deflection limitations at this location. If the deflection limitations are standard, please note as "Standard". Please review standards in section 10, tables 3.1, 3.2, 3.3, and 3.4. Material not listed require deflections limits on the contract.
Gutters & Downspouts? Specify "Yes" or "No"

Sheeting

Roof Type: Specify the type of roof such as "PBR", "SSR", or "Other". If the type is, "SSR" see Standing Seam Roof Information. If it is "Other", provide the additional information in the appropriate section.

- Wall Type:** Specify the type of wall panel such as "PBR", "Reverse PBR", or "Other". If it is "Other", provide the additional information in the appropriate section. If wall systems are by others provide Additional Information Sheets A or B and C.
- Gauge:** Specify the gauge of the roof panels and the wall panels.
- Finish:** Specify "galvalume" "standard color", etc. for the roof and wall panels.
- UL90 Cert.** Specify either "Yes" or "No" for the roof panels.
- Written Warranty:** Specify either "Yes" or "No" for the roof and wall panels.
- Rake Trim Closures:** Specify "Yes" or "No" for the roof panels. This does not apply to the wall panels and is shown as "N/A".
- Insulation:** Specify "By SPIRCO" if the building is insulated and SPIRCO is providing the insulation, "By Others" if the building is insulated and the insulation is provided by others, or "N/A" if the building is not insulated.

Roof and Walls:

- Type:** Specify the type of insulation for the roof and walls.
- Thickness:** Specify the thickness of the insulation in the roof and walls.
- Standing Seam Roof Information:** Specify the name of the standing seam.
- Clips:** Specify the type of standing seam clips or per manufacturer.
- Thermal Blocks Required?** Note as "N/A", "Per Manufacturer", or "No".
- Seamer:** Specify "No" or see "Additional Information".

Standard Accessories: Specify the size, color, and quantity of all standard accessories to be included with building.

Non-Standard Accessories: Specify the size, color, and quantity of all non-standard accessories to be included with building.

Framed Openings: Specify the size, location, and quantity of all framed openings included with building. Also, specify if head and jamb covers are to be included. The wall and bay must be specified here if any of the doors are field located. All factory located doors must be shown on the sketch.

Do doors and windows furnished by others provide wind resistance per code?: Answer this question so we can properly design your building. See section 12 of these instructions for further explanation.

Additional Information

Please write in any items or information, which is a part of the building structure, important additional design information, special non-structural accessories, or structural accessories.

Building Sketch

A sketch is required for each building on each contract. The sketch should show a top view with bay spacing, each wall elevation, all framed opening locations, and any other information needed to properly design the building.

Terms and Conditions

Each contract includes the standard terms and conditions of the contract document. It is very important that each buyer reads and fully understands the terms and conditions. The information is very specific and could head off any future misunderstandings.

Thank you for choosing our company to service your building needs. We understand there are many other companies you could have chosen. If you need further assistance with our contract documents, please contact your sales representative.

Explanation of drawing requirements on contract:

- * Three copies of the anchor bolt plan and erection drawings are sent with the building delivery with every order.
- * One letter of certification is sent with every order as an added benefit to the customer. Additional copies can be requested under the "Order Requirements" page of the contract and may require an additional charge.

Additional Options:

Erection Drawings: Three copies of the erection drawings are sent with every building. When erection drawings with an Engineer's seal are requested, they are processed when the building is sent from drafting to production. Sealed erection drawings will be sent by mail around the time the building is scheduled for delivery.

Permit Drawings: Anchor bolt plans and permit drawings are generated and usually sealed by the Engineer unless specified otherwise on the contract. One copy of the letter of certification is provided with each copy of permit drawings. On a standard building permit drawings usually take 2 to 3 weeks to receive after all information is received. For complex buildings it will take longer. The "Release for Fabrication" must be signed for the building to be scheduled for fabrication. With the release signed and the building is scheduled you will receive a letter in the mail stating the week the job is scheduled for delivery. If the release is not signed, the job will be placed on "Permit Hold" and you will receive a letter stating that the job is on hold. When the job is on "Permit Hold", there will not be any more work beyond permit drawings performed on the job until notice is sent to us in writing to release the job for fabrication. At this point the building will be scheduled for fabrication.

Approval Drawings: Approval drawings will be provided, only if they are requested on the contract. An Engineer's seal is available on the approval drawings if requested on the contract. On a standard building approval drawings usually take 2 to 3 weeks to receive after information is received. For complex buildings it will take longer. You cannot sign the release for fabrication on jobs requiring approval. Approval drawings must be signed on and returned to us with authorization to start fabrication as stated on the plans.

Design Calculations: Formal calculations will be provided at additional cost if requested. Make sure that your salesperson is aware of this requirement so they can price the project properly. If the calculations are not quoted, you cannot add them to the contract without a change order for the additional charges.

Hold Definitions

ANY JOBS PLACED ON HOLD SHALL BE REMOVED FROM THE SCHEDULE IMMEDIATELY.

Spirco uses six different hold categories in order to better control unnecessary costs to both the customer and Spirco. These holds are defined below. The customer typically uses the first four types listed in order so they may get their part of the construction process ready to receive the building. The manufacturer typically uses the last two holds to stop work when there are questions about the project or the contract requirements are not met.

APPROVAL HOLD "A"

- The customer must return signed final approval drawings to the drafting manager before the job will be scheduled.
- Any changes to the approval drawings will be forwarded to sales and a change order will be required.
- The drafting manager will inform the scheduling manager to schedule the job.
- Spirco will begin detailing the job when it is placed in the schedule.

CUSTOMER HOLD "C"

- The customer wants the entire project stopped.
- Spirco will schedule the job, after it is removed from customer hold in writing. Spirco will begin detailing the job when it is placed in the schedule

PERMIT HOLD "PE"

- The customer does not have permits.
- The customer must request permit hold no later than 4 weeks prior to delivery.
- Permit drawings will be sent and then all work will stop.
- Spirco will schedule the job, after removal from permit hold in writing. Spirco will begin detailing the job when it is placed in the schedule

PRODUCTION / FABRICATION HOLD "PR"

- The customer does not want the building fabricated.
- Spirco will continue detailing until the job is ready for fabrication. Spirco will schedule the job, after it is removed from production hold in writing.

DEPOSIT HOLD "D"

- If a deposit is required on the contract and has not been paid three weeks before delivery, the job is automatically placed on deposit hold.
- The scheduling manager will call the customer, fax a letter to the customer, and then mail a letter to the customer stating that the deposit has not been received and the job has been removed from the schedule.
- This job will not be rescheduled until the deposit check is in Spirco's possession.

ENGINEERING HOLD "E"

- The Engineering department may put a job on hold when questions have gone unanswered or there are potential problems with the contract and the design application. Delays due to unanswered questions from the Engineering Department can cause problems with the schedule of the job in question and other jobs. Therefore, answers to questions by design must be returned within 48 hours and answers to questions by drafting must be returned within 24 hours to avoid engineering hold. The Engineering department will inform the scheduling manager to reschedule the job when all questions have been answered.

Any job on hold for more than 90 days is subject to re-pricing at the manufacturer's discretion. A job is officially on hold when the phone call informing the customer and a letter to the customer from scheduling has been faxed and mailed. No job placed on hold by the customer will be removed from hold without written authorization from the customer.

IX. Wind, Snow, Seismic and Rain Data by U.S. County

9.1 Introduction

In this section, climatological data are tabulated by county. The methods used to determine each of the values are given below. Using a single point to represent an entire county may produce substantial errors for counties with large areas or closely spaced load contours. For example, in Alaska the large political divisions are not conducive to assigning a single value. The values given should only be used as a relative guide and the map should be referred to for the appropriate design parameters. Snow loads in some areas should be used with caution since local conditions may be more severe than indicated here. Also, some regions have very closely spaced contours that could introduce errors.

Seismic spectral response values were obtained from county-by-county data provided by BSSC that were compiled from the 1997 standard. Values were provided by zip code, but were taken at the county seat in order to obtain countywide values for the purpose of this compilation. For areas of high seismic activity, this provides a very crude location measure and may yield significantly unconservative ground motion values. The recommended approach, in areas of high seismicity, is to use the CD provided with the IBC. Additionally, inputting the latitude and longitude of the site yields the most accurate spectral response values. The latitude and longitude can be readily obtained from the site street address from a source such as www.mapblast.com.

Ground snow loads are based on ASCE 7-98 Figure 7-1 (Table 7-1 for Alaska) and are also reproduced in IBC 2000 as Figure 1608.2 (Table 1608.2 for Alaska). Wind velocities are based on ASCE 7-98 Figure 6-1 that is also reproduced in IBC 2000 as Figure 1609. Note that counties that have all or part of their boundary in a "Special Wind Region" are noted with an asterisk after the basic wind speed. Special consideration should be given to these regions where records or experience indicate that wind speeds are higher than those reflected in the ASCE or IBC figure or the county listing. For wind velocity, values were determined by linearly interpolating between the two contours on either side of a county using the approximate geographic center of the county. Ground snow load was not interpolated, that is, the value of the snow load at the point chosen for the county was used.

Counties that may have areas that fall in an IBC designated wind borne debris region are noted with the basic wind speed in bold type. These counties may include hurricane-prone regions which are within one mile of the coastal mean high water line and where the basic wind speed is 110 mph or greater; or where the basic wind speed is 120 mph or greater; or Hawaii. The design wind speeds used in these counties, that are generally in areas of closely spaced contours along the coastline, should also be closely evaluated based on where the actual building is located on the ASCE or IBC figures.

Rainfall intensities were determined somewhat differently. The contour maps found in the Weather Bureau Technical Paper No. 40 for thirty-minute duration storms with return periods of five and twenty-five years were used. The values of the contours were adjusted to reflect 5-minute duration by using the factor found in the paper. New contours with whole number values were drawn and each county was assigned the value of the next largest contour.

LEGEND

S : Ground snow load for 50-yr. mean recurrence interval in pounds per square foot (psf).

() Numbers in parentheses represent the upper elevation limit in feet for the ground snow load value given. Refer to ASCE 7-98 Figure 7-1 or IBC 2000 Figure 1608.2 for other ground snow loads that may be available for higher elevations.

CS Indicates site-specific case study is required.

W : 3-second gust wind speed for 50-yr. mean recurrence interval in miles per hour (mph).

* Indicates part of the county is in a “Special Wind Region” and may require special consideration or local knowledge of actual wind speeds.

Basic wind speeds in **bold type** indicate that the county may have areas that are designated as wind borne debris regions.

S_s : 0.2 Second spectral response acceleration (5% critical damping). 2% probability of exceedance in 50 years.

S₁ : 1.0 Second spectral response acceleration (5% critical damping). 2% probability of exceedance in 50 years.

I₁ : Rainfall Intensity (inches per hour).
 5-minute duration
 5-year recurrence
 — Indicates rainfall intensity is undefined.

I₂ : Rainfall Intensity (inches per hour).
 5-minute duration
 25-year recurrence
 — Indicates rainfall intensity is undefined.

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name	
ALABAMA														
5	96	17.50	8.50	8	11	Autauga	—	102	—	—	—	—	Kenai Peninsula	
0	130	12.50	6.20	10	12	Baldwin	—	112	—	—	—	—	Ketchikan Gateway	
5	98	13.50	7.60	8	11	Barbour	—	110	—	—	—	—	NW Arctic Borough	
5	92	23.40	9.60	8	11	Bibb	—	132	—	—	—	—	Kodiak Island	
10	90	32.90	12.20	7	10	Blount	—	92	—	—	—	—	Matanuska-Susitna	
5	98	15.00	7.90	8	11	Bullock	—	128	—	—	—	—	Nome	
5	104	13.80	7.40	9	11	Butler	—	105	—	—	—	—	North Slope	
5	90	30.50	11.50	8	10	Calhoun	—	120	—	—	—	—	Prince-Wales-Ketchikan	
5	92	19.10	9.20	8	11	Chambers	—	121	—	—	—	—	Sitka	
5	90	38.80	12.80	7	10	Cherokee	—	118	—	—	—	—	Skagway-Yakutat-Angoon	
5	93	21.70	9.30	8	11	Chilton	—	90	—	—	—	—	Southeast Fairbanks	
5	103	18.60	8.70	9	11	Choctaw	—	98	—	—	—	—	Valdez-Cordova	
5	105	16.10	7.70	9	11	Clarke	—	126	—	—	—	—	Wade Hampton	
5	90	26.10	10.20	8	10	Clay	—	112	—	—	—	—	Wrangell-Petersburg	
5	90	28.90	11.30	8	10	Cleburne	—	90	—	—	—	—	Yukon-Koyukuk	
0	107	12.20	6.50	9	11	Coffee								
10	90	30.90	14.10	7	9	Colbert								
5	109	12.70	6.70	9	11	Conecuh	5(5000)	90	26.60	7.30	4	6	ARIZONA	
5	93	22.10	9.30	8	11	Coosa	0(3500)	90	33.00	9.00	5	7	Apache	
0	110	12.10	6.40	9	11	Covington	0(3000)	90*	44.80	12.90	4	6	Cochise	
5	103	12.90	7.10	9	11	Crenshaw	0(3500)	90	42.10	11.50	5	7	Coconino	
10	90	29.20	12.50	7	10	Cullman	0(3500)	90	31.10	8.80	5	7	Gila	
0	104	12.20	6.70	9	11	Dale	CS	90	36.30	9.40	4	6	Graham	
5	98	17.40	8.60	8	11	Dallas	0(2000)	90	24.00	9.60	4	6	Greenlee	
10	90	41.80	13.40	7	9	De Kalb	0(2000)	90	22.60	6.50	4	7	La Paz	
5	95	17.90	8.70	8	11	Elmore	0(3000)	90	29.30	9.20	4	6	Maricopa	
0	116	12.30	6.30	9	11	Escambia	0(3000)	90*	19.50	6.00	4	6	Mohave	
5	90	34.90	12.40	7	10	Etowah	0(3000)	90	32.20	8.70	6	8	Navajo	
10	90	26.50	11.90	7	10	Fayette	0(2000)	90	28.70	8.40	5	8	Pima	
10	90	28.60	13.70	7	9	Franklin	0(3500)	90	19.60	5.80	6	9	Pinal	
0	111	11.40	6.20	9	11	Geneva	CS	90	48.40	13.40	4	7	Santa Cruz	
5	93	21.40	9.60	8	11	Greene	0(1000)	90	67.40	23.50	4	6	Yavapai	
5	94	19.80	9.30	8	11	Hale							Yuma	
0	100	12.50	7.10	8	11	Henry								
0	106	11.90	6.40	9	11	Houston	10	90	50.70	19.40	8	10	ARKANSAS	
10	90	37.50	13.20	6	9	Jackson	10	90	26.00	12.20	8	11	Arkansas	
5	90	31.80	11.60	8	10	Jefferson	15	90	38.00	15.90	7	10	Ashley	
10	90	26.00	12.30	7	10	Lamar	15	90	17.70	9.30	8	11	Baxter	
10	90	31.50	14.30	7	9	Lauderdale	15	90	27.50	12.90	8	10	Benton	
10	90	27.90	13.10	7	9	Lawrence	10	90	29.70	13.20	8	11	Boone	
5	94	17.80	8.80	8	11	Lee	10	90	27.10	12.30	8	11	Bradley	
10	90	28.10	13.30	6	9	Limestone	15	90	22.40	11.20	8	11	Calhoun	
5	99	15.80	8.00	8	11	Lowndes	10	90	28.70	12.50	8	11	Carroll	
5	96	16.70	8.40	8	11	Macon	10	90	28.70	12.50	8	11	Chicot	
10	90	29.20	13.00	6	9	Madison	10	90	163.60	47.40	7	9	Clark	
5	98	18.00	8.70	9	11	Marengo	10	90	60.60	20.80	7	10	Clay	
10	90	27.30	13.10	7	10	Marion	10	90	35.90	14.20	8	11	Cleburne	
10	90	33.30	12.70	7	9	Marshall	5	90	20.50	9.70	8	11	Cleveland	
0	130	12.30	6.00	10	12	Mobile	10	90	40.70	15.60	8	11	Columbia	
5	106	14.00	7.00	9	11	Monroe	10	90	281.20	83.70	7	10	Conway	
5	98	16.80	8.30	8	11	Montgomery	10	90	19.80	9.50	8	11	Craighead	
10	90	28.00	13.00	7	9	Morgan	10	90	180.50	53.10	7	10	Crawford	
5	95	19.00	9.10	8	11	Perry	10	90	176.20	52.20	7	10	Crittenden	
5	90	24.00	11.00	8	10	Pickens	10	90	31.30	13.30	8	11	Cross	
5	100	13.10	7.30	8	11	Pike	10	90	34.90	14.30	8	10	Dallas	
5	90	24.80	10.00	8	10	Randolph	10	90	31.80	13.70	8	11	Desha	
5	96	16.80	8.60	8	11	Russell	10	90	50.00	17.90	8	10	Drew	
5	90	33.60	12.10	8	11	St. Clair	10	90	22.40	11.00	8	11	Faulkner	
5	90	27.00	10.30	8	10	Shelby	15	90	52.70	19.50	7	10	Franklin	
5	97	19.30	9.30	8	11	Sumter	10	90	31.50	13.20	8	11	Fulton	
5	90	29.00	11.00	8	10	Talladega	10	90	39.20	15.10	8	11	Garland	
5	93	19.60	9.10	8	11	Tallapoosa	10	90	181.70	53.60	7	10	Grant	
5	90	25.70	10.70	8	10	Tuscaloosa	10	90	20.80	9.80	8	11	Greene	
10	90	28.90	12.10	7	10	Walker	10	90	34.70	13.70	8	11	Hempstead	
5	111	16.50	7.50	9	11	Washington	10	90	20.40	9.70	8	11	Hot Spring	
5	100	15.70	7.90	9	11	Wilcox	10	90	73.90	24.20	7	10	Howard	
10	90	27.80	12.60	7	10	Winston	10	90	56.50	20.40	7	10	Independence	
							10	90	110.40	32.00	7	10	Izard	
							10	90	41.60	16.60	8	11	Jackson	
							10	90	25.90	12.20	8	11	Jefferson	
—	125	—	—	—	—	ALASKA	5	90	19.00	9.40	8	11	Johnson	
—	125	—	—	—	—	Aleutian Is. East	10	90	114.30	32.30	7	10	Lafayette	
—	105	—	—	—	—	Aleutian Is. West	10	90	94.20	28.50	7	10	Lawrence	
—	113	—	—	—	—	Anchorage	10	90	38.00	15.20	8	11	Lee	
—	123	—	—	—	—	Bethel	10	90	18.30	9.00	8	11	Lincoln	
—	116	—	—	—	—	Bristol Bay	10	90	23.40	11.30	8	11	Little River	
—	90	—	—	—	—	Dillingham	10	90	56.70	20.20	8	10	Logan	
—	90	—	—	—	—	Fairbanks North Star	10	90	21.70	10.90	8	11	Lonoke	
—	100	—	—	—	—	Haines							Madison	
—	110	—	—	—	—	Juneau								

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
15	90	33.90	14.30	8	10	Marion	CS	85*	64.10	28.10	4	6	Siskiyou
5	90	18.10	9.00	8	11	Miller	0(1500)	85	150.00	60.00	4	6	Solano
10	90	313.10	100.60	7	9	Mississippi	0(800)	85	191.50	78.70	4	6	Sonoma
10	90	63.20	22.60	7	10	Monroe	0(1500)	85	87.00	30.00	4	6	Stanislaus
10	90	24.40	11.30	8	11	Montgomery	0(1500)	85	49.90	20.30	4	6	Sutter
10	90	23.70	10.90	8	11	Nevada	5(800)	85	79.20	26.40	4	6	Tehama
10	90	27.60	12.90	8	11	Newton	CS	85	96.70	31.50	4	6	Trinity
10	90	25.90	11.70	8	11	Ouachita	0(1500)	85*	45.50	19.50	4	6	Tulare
10	90	38.90	14.80	8	11	Perry	CS	85*	39.90	16.60	4	6	Tuolumne
10	90	68.30	24.00	8	10	Phillips	0(1800)	85	214.40	95.40	4	6	Ventura
10	90	22.50	10.50	8	11	Pike	0(1500)	85	97.70	31.60	4	6	Yolo
10	90	267.60	81.40	7	10	Poinsett	0(1500)	85	48.50	20.10	4	6	Yuba
10	90	19.30	9.50	8	11	Polk							
10	90	31.00	13.50	8	11	Pope							COLORADO
10	90	70.80	24.10	7	10	Prairie	20	90*	18.60	5.60	4	7	Adams
10	90	47.70	17.80	8	11	Pulaski	CS	90*	37.20	11.50	4	6	Alamosa
10	90	100.50	28.50	7	10	Randolph	20	90*	20.20	5.90	4	7	Arapahoe
10	90	121.20	36.80	7	10	St. Francis	CS	90	38.80	9.70	4	6	Archuleta
10	90	39.70	15.20	8	11	Saline	15	90	11.90	4.00	6	8	Baca
10	90	20.80	10.10	8	11	Scott	15	90	13.10	4.60	5	8	Bent
10	90	38.40	15.70	8	10	Searcy	CS	90*	23.00	6.10	4	6	Boulder
10	90	19.80	9.50	8	11	Sebastian	CS	90	41.00	12.50	4	6	Chaffee
10	90	18.40	9.10	8	11	Sevier	10(5000)	90	10.60	3.90	5	8	Cheyenne
10	90	62.20	21.40	7	10	Sharp	CS	90*	26.70	6.60	4	6	Clear Creek
10	90	53.20	19.60	7	10	Stone	CS	90	34.00	10.30	4	6	Conejos
5	90	23.40	10.80	8	11	Union	CS	90*	38.70	11.80	4	7	Costilla
10	90	46.50	17.80	8	10	Van Buren	10(5000)	90	15.60	5.50	5	8	Crowley
10	90	18.70	9.60	8	11	Washington	CS	90*	28.00	9.30	4	6	Custer
10	90	69.50	23.30	7	10	White	CS	90	44.10	9.20	4	6	Delta
10	90	94.60	28.30	7	10	Woodruff	20	90*	19.80	5.90	4	7	Denver
10	90	26.80	12.40	8	11	Yell	CS	90	24.40	6.40	4	6	Dolores
							CS	90*	19.00	5.90	4	7	Douglas
						CALIFORNIA	CS	90	37.60	8.30	4	6	Eagle
0(2400)	85	151.40	60.00	4	6	Alameda	20	90	17.80	5.50	4	7	Elbert
CS	85*	182.00	74.90	4	6	Alpine	CS	90*	18.20	6.00	4	7	El Paso
0(1500)	85*	39.00	16.70	4	6	Amador	CS	90*	20.90	7.40	4	6	Fremont
0(1500)	85	52.80	19.50	4	6	Butte	CS	90	43.60	9.00	4	6	Garfield
0(1500)	85*	38.10	16.60	4	6	Calaveras	CS	90*	25.20	6.30	4	6	Gilpin
0(1500)	85	78.00	28.70	4	6	Colusa	CS	90	27.20	6.80	4	6	Grand
0(1500)	85	150.00	60.00	4	6	Contra Costa	CS	90	41.60	10.20	4	6	Gunnison
5(300)	85	159.10	76.40	4	6	Del Norte	CS	90	53.80	12.80	4	6	Hinsdale
CS	85*	46.40	18.20	4	6	El Dorado	20(6200)	90*	22.30	7.30	4	7	Huerfano
0(1500)	85*	46.30	20.40	4	6	Fresno	CS	90	24.40	6.30	4	6	Jackson
5(800)	85	76.20	27.20	4	6	Glenn	CS	90*	22.40	6.10	4	6	Jefferson
0(700)	85	203.50	83.60	4	6	Humboldt	10(5000)	90	11.90	4.20	5	8	Kiowa
0(1000)	85*	150.00	60.00	4	6	Imperial	20	90	10.00	3.70	5	8	Kit Carson
0(2000)	85*	130.80	51.90	4	6	Inyo	CS	90	34.70	8.40	4	6	Lake
0(1800)	85*	117.40	42.10	4	6	Kern	CS	90	28.30	7.70	4	6	La Plata
0(1500)	85	59.50	24.30	4	6	Kings	20(6600)	90*	21.00	5.80	4	6	Larimer
CS	85	150.00	60.00	4	6	Lake	20(6200)	90*	20.70	6.30	5	8	Las Animas
15(4400)	85*	113.60	36.50	4	6	Lassen	10(5000)	90	13.20	4.40	5	8	Lincoln
0(1800)	85*	150.00	60.00	4	6	Los Angeles	20	90	10.20	4.00	5	8	Logan
0(1500)	85*	51.80	20.90	4	6	Madera	CS	90	37.70	8.40	4	6	Mesa
0(1500)	85	150.00	60.50	4	6	Marin	CS	90	42.30	11.70	4	6	Mineral
0(1500)	85	51.40	19.10	4	6	Mariposa	35(6000)	90	26.60	7.10	4	6	Moffat
0(800)	85	186.90	79.70	4	6	Mendocino	CS	90	23.20	6.20	4	6	Montezuma
0(1500)	85	55.90	21.90	4	6	Merced	CS	90	48.10	9.80	4	6	Montrose
15(4400)	85*	79.30	28.50	4	6	Modoc	20	90	12.30	4.30	4	7	Morgan
CS	85	150.00	60.00	4	6	Mono	10(5000)	90	15.20	5.20	5	8	Otero
0(1500)	85	150.20	60.50	4	6	Monterey	CS	90	53.60	12.20	4	6	Ouray
0(1500)	85	156.30	60.00	4	6	Napa	CS	90*	28.80	8.00	4	6	Park
CS	85*	55.00	18.60	4	6	Nevada	20	90	8.30	3.50	5	8	Phillips
0(1800)	85	128.70	48.80	4	6	Orange	CS	90	43.30	9.20	4	6	Pitkin
CS	85*	41.30	17.50	4	6	Placer	10(5000)	90	11.70	4.10	6	8	Prowers
CS	85*	107.20	31.00	4	6	Plumas	10(5000)	90*	17.10	6.00	4	7	Pueblo
0(2000)	85*	150.00	60.00	4	6	Riverside	30(6000)	90	33.50	8.00	4	6	Rio Blanco
0(1500)	85	56.30	21.80	4	6	Sacramento	CS	90	35.50	10.50	4	6	Rio Grande
0(2400)	85	150.30	75.20	4	6	San Benito	CS	90	25.30	6.70	4	6	Routt
0(2000)	85*	150.60	60.00	4	6	San Bernardino	CS	90*	39.90	12.50	4	6	Saguache
0(1800)	85	152.90	74.60	4	6	San Diego	CS	90	49.60	11.70	4	6	San Juan
0(2400)	85	150.00	70.00	4	6	San Francisco	CS	90	48.30	11.00	4	6	San Miguel
0(1500)	85	81.60	29.30	4	6	San Joaquin	20	90	8.40	3.50	5	8	Sedgwick
0(1500)	85	137.30	52.70	4	6	San Luis Obispo	CS	90	29.70	7.60	4	6	Summit
0(2400)	85	163.80	96.20	4	6	San Mateo	CS	90*	20.00	6.50	4	7	Teller
0(1500)	85	191.90	79.50	4	6	Santa Barbara	20	90	10.60	4.00	5	8	Washington
0(2400)	85	150.00	60.00	4	6	Santa Clara	20	90*	18.00	5.40	4	7	Weld
0(2400)	85	150.00	60.00	4	6	Santa Cruz	20	90	8.40	3.50	5	8	Yuma
CS	85*	84.00	27.40	4	6	Shasta							
CS	85*	94.30	27.10	4	6	Sierra							CONNECTICUT

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
30	105	33.20	8.70	6	8	Fairfield	0	103	12.50	6.40	10	11	Suwannee
30	99	27.50	8.50	5	7	Hartford	0	111	11.20	6.00	10	11	Taylor
35	94*	28.00	8.70	5	7	Litchfield	0	98	12.80	6.40	10	11	Union
30	110	27.70	8.40	6	8	Middlesex	0	119	11.40	5.30	10	12	Volusia
30	108	28.60	8.40	6	8	New Haven	0	113	10.50	5.70	10	12	Wakulla
30	115	26.10	7.90	6	8	New London	0	120	10.70	5.90	10	12	Walton
30	100	26.90	8.50	5	7	Tolland	0	117	11.00	6.00	10	11	Washington
30	105	26.30	8.30	5	7	Windham							
						DELAWARE	0	101	21.90	10.10	8	11	Appling
25	96	20.60	6.30	7	10	Kent	0	96	16.60	8.60	9	11	Atkinson
20	90	31.40	7.80	7	9	New Castle	0	99	18.90	9.30	8	11	Bacon
20	107	15.40	5.80	7	10	Sussex	0	99	12.60	7.20	9	11	Baker
							5	91	26.30	11.40	8	10	Baldwin
							10	90	31.70	12.70	7	9	Banks
25	90	18.00	6.30	7	10	DISTRICT OF COLUMBIA	5	90	27.40	11.90	7	10	Barrow
							5	90	36.90	12.50	7	10	Bartow
							0	96	17.00	8.80	8	11	Ben Hill
						FLORIDA	0	97	14.80	8.00	9	11	Berrien
0	100	12.00	5.90	10	11	Alachua	5	92	22.40	10.10	8	10	Bibb
0	97	14.10	7.20	10	11	Baker	5	94	19.40	9.50	8	11	Bleckley
0	123	8.80	5.30	10	12	Bay	0	107	18.80	9.20	9	11	Brantley
0	98	12.80	6.40	10	11	Bradford	0	101	12.50	6.90	9	11	Brooks
0	121	10.50	4.70	10	12	Brevard	0	115	32.90	13.30	9	11	Bryan
0	131	6.70	2.60	12	14	Broward	0	105	34.90	13.70	8	11	Bulloch
0	115	10.70	5.80	10	12	Calhoun	5	96	38.30	14.20	8	10	Burke
0	117	8.30	3.00	10	12	Charlotte	5	90	23.20	10.50	8	10	Butts
0	110	10.40	4.60	10	12	Citrus	0	98	12.80	7.40	8	11	Calhoun
0	105	13.30	6.60	10	11	Clay	0	116	18.20	9.00	9	11	Camden
0	128	7.40	2.60	11	12	Collier	0	100	29.20	12.80	8	11	Candler
0	99	12.80	6.50	10	11	Columbia	5	90	25.90	10.70	8	10	Carroll
0	140	6.10	2.40	12	14	Dade	10(1800)	90	55.70	14.30	7	9	Catoosa
0	110	8.80	3.30	10	12	De Soto	0	104	16.80	8.50	9	11	Charlton
0	119	10.70	5.60	10	11	Dixie	0	120	40.20	14.70	9	11	Chatham
0	115	14.90	7.60	10	11	Duval	5	94	16.10	8.50	8	11	Chattahoochee
0	129	10.30	5.60	10	12	Escambia	5	90	48.90	13.80	7	10	Chattooga
0	115	11.90	5.90	10	12	Flagler	5	90	34.70	12.50	7	10	Cherokee
0	125	8.00	4.90	10	12	Franklin	5	90	28.60	12.30	7	10	Clarke
0	107	11.50	6.10	10	11	Gadsden	0	98	12.60	7.30	8	11	Clay
0	107	11.20	5.80	10	11	Gilchrist	5	90	23.50	10.50	8	10	Clayton
0	115	9.00	3.20	11	12	Glades	0	97	15.80	8.20	9	11	Clinch
0	127	8.10	4.90	10	12	Gulf	5	90	28.20	11.70	8	10	Cobb
0	100	13.10	7.00	10	11	Hamilton	0	96	17.50	8.90	8	11	Coffee
0	107	9.40	3.60	10	12	Hardee	0	98	13.00	7.50	9	11	Colquitt
0	118	8.90	3.10	11	12	Hendry	5	92	39.60	14.00	8	10	Columbia
0	112	9.80	4.20	11	13	Hernando	0	98	14.00	7.70	9	11	Cook
0	110	9.60	3.60	10	12	Highlands	5	90	22.50	9.90	8	10	Coweta
0	110	8.60	3.70	10	12	Hillsborough	5	92	18.90	9.40	8	10	Crawford
0	114	10.90	6.00	10	11	Holmes	0	95	16.30	8.70	8	11	Crisp
0	126	8.20	3.70	10	12	Indian River	10(1800)	90	48.10	13.90	7	9	Dade
0	109	11.20	6.00	10	11	Jackson	5	90	34.60	12.70	7	9	Dawson
0	106	11.90	6.30	10	11	Jefferson	0	104	12.00	6.40	9	11	Decatur
0	109	11.70	6.10	10	11	Lafayette	5	90	25.70	11.20	8	10	De Kalb
0	101	11.30	4.90	10	12	Lake	0	94	19.00	9.50	8	11	Dodge
0	121	8.30	2.90	10	12	Lee	0	94	16.90	8.80	8	11	Dooly
0	108	11.40	6.10	10	11	Leon	0	97	13.70	7.80	8	11	Dougherty
0	113	11.10	5.60	10	11	Levy	5	90	26.70	11.10	8	10	Douglas
0	115	10.70	5.80	10	12	Liberty	0	102	12.30	6.90	9	11	Early
0	105	12.20	6.40	10	11	Madison	0	99	13.50	7.30	9	11	Echols
0	116	7.80	3.30	10	12	Manatee	0	108	42.20	15.70	9	11	Effingham
0	98	11.30	5.20	10	11	Marion	10	90	37.40	13.40	7	10	Elbert
0	130	7.80	3.30	11	14	Martin	5	97	27.90	12.50	8	11	Emanuel
0	141	2.70	1.30	11	12	Monroe	0	104	28.60	12.60	8	11	Evans
0	109	17.00	8.50	10	11	Nassau	10(1800)	90	48.50	13.90	7	9	Fannin
0	124	10.90	5.90	10	12	Okaloosa	5	90	22.80	10.20	7	10	Fayette
0	116	8.80	3.40	10	12	Okeechobee	5	90	42.10	13.10	7	10	Floyd
0	105	11.30	4.60	10	12	Orange	5	90	29.50	12.20	7	10	Forsyth
0	109	11.10	4.30	10	12	Osceola	10	90	34.60	13.00	7	9	Franklin
0	130	7.10	2.80	12	14	Palm Beach	5	90	25.60	11.10	8	10	Fulton
0	111	10.00	4.10	11	13	Pasco	10(1800)	90	46.00	13.70	7	9	Gilmer
0	126	7.80	3.60	10	12	Pinellas	5	92	31.70	13.00	8	10	Glascok
0	105	10.10	3.90	10	12	Polk	0	119	20.50	9.50	9	11	Glynn
0	106	12.40	6.10	10	11	Putnam	5	90	48.90	13.70	7	9	Gordon
0	119	12.70	6.40	10	11	St. Johns	0	103	12.20	6.50	9	11	Grady
0	130	8.00	3.50	11	12	St. Lucie	5	90	28.70	12.30	8	10	Greene
0	124	10.90	5.80	10	12	Santa Rosa	5	90	26.90	11.70	7	10	Gwinnett
0	125	7.70	3.20	10	12	Sarasota	10(1800)	90	36.60	13.10	7	9	Habersham
0	110	11.30	5.00	10	12	Seminole	5	90	30.00	12.40	7	9	Hall
0	99	10.60	4.50	10	12	Sumter	5	90	28.40	12.30	8	10	Hancock

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
5	90	29.30	11.50	8	10	Haralson	5	93	27.30	12.10	8	10	Washington
5	92	18.10	9.00	8	11	Harris	0	106	23.60	10.70	9	11	Wayne
10	90	37.80	13.40	7	9	Hart	5	96	15.20	8.30	8	11	Webster
5	90	22.40	9.70	8	10	Heard	0	96	21.60	10.20	8	11	Wheeler
5	90	23.30	10.50	8	10	Henry	10(1800)	90	36.20	13.00	7	9	White
5	93	18.60	9.30	8	11	Houston	10(1800)	90	55.60	14.30	7	9	Whitfield
0	96	16.50	8.60	8	11	Irwin	0	95	17.80	9.10	8	11	Wilcox
5	90	28.40	12.30	7	10	Jackson	5	90	36.80	13.40	7	10	Wilkes
5	90	25.00	11.00	8	10	Jasper	5	93	24.60	11.00	8	10	Wilkinson
0	97	20.70	9.80	8	11	Jeff Davis	0	97	14.40	8.00	8	11	Worth
5	94	30.60	13.00	8	10	Jefferson							
5	98	36.40	14.00	8	11	Jenkins							HAWAII
5	95	26.20	11.80	8	11	Johnson	—	105	150.00	60.00	—	0	Hawaii
5	90	24.40	10.70	8	10	Jones	—	105	61.40	17.80	—	0	Honolulu
5	90	20.30	9.60	8	10	Lamar	—	105	24.40	6.80	—	0	Kauai
0	97	14.70	7.90	9	11	Lanier	—	105	97.00	24.80	—	0	Maui
5	95	23.80	10.90	8	11	Laurens							
0	96	14.30	8.00	8	11	Lee							IDAHO
0	114	28.20	12.40	9	11	Liberty	10(3200)	90	35.90	11.00	4	6	Ada
5	90	40.40	13.90	7	10	Lincoln	CS	90	51.20	14.40	4	6	Adams
0	109	25.80	11.50	9	11	Long	CS	90	47.40	14.20	4	6	Bannock
0	99	13.10	7.30	9	11	Lowndes	CS	90	116.90	37.90	4	6	Bear Lake
10(1800)	90	36.00	12.90	7	9	Lumpkin	CS	90	35.30	9.50	4	6	Benewah
5	92	36.60	13.50	8	10	McDuffie	20(4500)	90	51.20	14.80	4	6	Bingham
0	122	23.90	10.70	9	11	McIntosh	CS	90	54.90	15.80	4	6	Blaine
5	93	17.10	8.90	8	11	Macon	CS	90	59.90	17.00	4	6	Boise
5	90	32.00	12.70	7	10	Madison	CS	90	36.60	9.90	4	6	Bonner
5	93	16.40	8.60	8	11	Marion	CS	90	57.40	17.30	4	6	Bonneville
5	90	19.00	9.40	8	10	Meriwether	CS	90	30.30	9.10	4	6	Boundary
0	103	12.20	6.70	9	11	Miller	CS	90	54.00	19.50	4	6	Butte
0	99	12.60	7.20	9	11	Mitchell	CS	90	44.70	13.20	4	6	Camas
5	90	21.70	9.90	8	10	Monroe	10(3200)	90	31.20	9.60	4	6	Canyon
0	97	23.40	10.80	8	11	Montgomery	CS	90	107.20	28.60	4	6	Caribou
5	90	27.10	11.80	8	10	Morgan	10(3800)	90	27.90	9.10	4	6	Cassia
10(1800)	90	53.90	14.10	7	9	Murray	CS	90*	53.80	18.60	4	6	Clark
5	93	16.80	8.60	8	11	Muscogee	CS	90*	28.50	8.70	4	6	Clearwater
5	90	25.20	11.20	8	10	Newton	CS	90	114.20	30.90	4	6	Custer
5	90	28.10	12.20	7	10	Oconee	20(3200)	90	30.20	9.30	4	6	Elmore
5	90	31.90	12.70	7	10	Oglethorpe	CS	90	95.90	26.60	4	6	Franklin
5	90	29.90	11.70	7	10	Paulding	CS	90*	55.00	18.10	4	6	Fremont
5	92	18.60	9.30	8	11	Peach	CS	90	38.60	11.90	4	6	Gem
5	90	39.40	13.10	7	9	Pickens	CS	90	31.30	9.30	4	6	Gooding
0	102	18.50	9.20	9	11	Pierce	CS	90*	28.70	8.80	4	6	Idaho
5	90	19.80	9.60	8	10	Pike	CS	90	52.20	16.30	4	6	Jefferson
5	90	37.50	12.50	7	10	Polk	10(3800)	90	28.00	8.80	4	6	Jerome
0	93	18.50	9.30	8	11	Pulaski	CS	90	37.80	10.20	4	6	Kootenai
5	90	26.70	11.60	8	10	Putnam	CS	90	28.60	8.80	4	6	Latah
5	97	13.70	7.70	8	11	Quitman	10(5000)	90*	59.40	18.30	4	6	Lemhi
10(1800)	90	41.30	13.60	7	9	Rabun	CS	90	28.50	8.70	4	6	Lewis
0	97	13.40	7.70	8	11	Randolph	CS	90	30.50	9.30	4	6	Lincoln
5	94	42.30	15.20	8	10	Richmond	CS	90	50.80	16.50	4	6	Madison
5	90	25.10	11.10	8	10	Rockdale	20(4500)	90	26.90	9.00	4	6	Minidoka
5	94	16.30	8.60	8	11	Schley	CS	90	28.70	8.90	4	6	Nez Perce
5	101	41.40	15.40	8	11	Screven	CS	90	89.70	23.80	4	6	Oneida
0	104	11.90	6.40	9	11	Seminole	CS	90	28.60	9.20	4	6	Owyhee
5	90	21.30	9.90	8	10	Spalding	CS	90	34.20	10.40	4	6	Payette
10(1800)	90	36.90	13.20	7	9	Stephens	10(3800)	90	34.90	11.60	4	6	Power
5	96	14.80	8.10	8	11	Stewart	CS	90	39.60	11.40	4	6	Shoshone
0	95	15.70	8.50	8	11	Sumter	CS	90	99.60	28.80	4	6	Teton
5	92	17.80	9.00	8	11	Talbot	10(3800)	90	27.60	8.70	4	6	Twin Falls
5	90	32.50	12.80	8	10	Taliaferro	CS	90	58.70	17.20	4	6	Valley
0	103	26.40	11.80	8	11	Tattnall	CS	90	36.60	11.20	4	6	Washington
5	93	17.80	9.10	8	11	Taylor							
0	96	19.80	9.60	8	11	Telfair							ILLINOIS
0	96	13.90	7.90	8	11	Terrell	20	90	17.00	8.90	6	9	Adams
0	102	12.20	6.60	9	11	Thomas	15	90	339.80	114.40	6	9	Alexander
0	97	15.00	8.20	8	11	Tift	20	90	57.20	18.40	6	9	Bond
0	99	25.70	11.60	8	11	Toombs	25	90	17.40	6.00	5	7	Boone
10(1800)	90	43.20	13.70	7	9	Towns	20	90	18.80	9.40	6	9	Brown
0	96	24.70	11.30	8	11	Treutlen	20	90	17.80	7.40	6	8	Bureau
5	91	19.40	9.30	8	10	Troup	20	90	32.70	13.20	6	9	Calhoun
0	96	15.60	8.40	8	11	Turner	25	90	13.50	5.80	6	6	Carroll
5	93	22.70	10.30	8	10	Twiggs	20	90	21.40	10.30	6	9	Cass
10(1800)	90	42.70	13.60	7	9	Union	20	90	23.50	10.50	6	8	Champaign
5	92	18.80	9.40	8	10	Upson	20	90	32.60	13.20	6	8	Christian
10(1800)	90	53.30	14.10	7	9	Walker	20	90	38.50	13.80	6	8	Clark
5	90	26.60	11.70	7	10	Walton	20	90	65.80	20.10	6	8	Clay
0	98	17.70	8.90	9	11	Ware	20	90	65.90	20.60	6	9	Clinton
5	90	33.70	13.10	8	10	Warren	20	90	37.00	13.60	6	8	Coles

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
25	90	18.60	6.50	5	7	Cook	20	90	82.70	23.10	6	9	Washington
20	90	54.30	17.20	6	8	Crawford	20	90	92.90	24.30	6	8	Wayne
20	90	43.60	15.10	6	8	Cumberland	15	90	98.40	26.30	6	8	White
25	90	19.60	6.50	6	8	De Kalb	25	90	15.20	6.20	6	8	Whiteside
20	90	22.00	10.30	6	8	De Witt	25	90	21.90	7.50	6	8	Will
20	90	27.80	12.10	6	8	Douglas	15	90	117.50	32.70	6	9	Williamson
25	90	21.60	6.90	5	8	Du Page	25	90	16.60	6.00	6	8	Winnebago
20	90	31.60	12.70	6	8	Edgar	20	90	17.80	8.70	6	8	Woodford
20	90	89.60	23.30	6	8	Edwards							
20	90	51.00	16.80	6	8	Effingham							
20	90	56.30	18.10	6	8	Fayette							INDIANA
20	90	19.00	9.20	6	8	Ford	20	90	19.80	7.00	5	7	Adams
15	90	102.80	27.90	6	9	Franklin	20	90	15.90	6.30	5	7	Allen
20	90	18.00	9.00	6	8	Fulton	20	90	20.60	10.10	5	8	Bartholomew
15	90	103.60	28.30	6	8	Gallatin	20	90	17.40	8.50	6	8	Benton
20	90	31.20	13.00	6	9	Greene	20	90	17.60	7.60	5	7	Blackford
20	90	21.00	7.80	6	8	Grundy	20	90	18.40	9.00	5	8	Boone
15	90	102.10	27.30	6	8	Hamilton	20	90	24.30	11.00	6	8	Brown
20	90	15.20	8.10	6	9	Hancock	20	90	15.80	8.00	5	8	Carroll
15	90	112.30	30.70	6	8	Hardin	20	90	14.30	7.40	5	7	Cass
20	90	13.00	7.00	6	9	Henderson	15	90	24.50	11.80	6	8	Clark
20	90	15.30	6.90	6	8	Henry	20	90	29.90	12.30	6	8	Clay
20	90	17.80	8.40	6	8	Iroquois	20	90	17.20	8.60	5	8	Clinton
15	90	111.90	31.00	6	9	Jackson	15	90	33.50	13.70	6	8	Crawford
20	90	57.60	18.10	6	9	Jasper	20	90	49.90	16.70	6	8	Daviess
20	90	90.40	24.40	6	9	Jefferson	20	90	18.20	8.90	5	8	Dearborn
20	90	38.30	14.00	6	9	Jersey	20	90	18.10	9.20	5	8	Decatur
30	90	10.80	5.00	6	8	Jo Daviess	20	90	14.70	6.00	5	7	De Kalb
15	90	170.90	49.50	6	9	Johnson	20	90	17.60	8.00	5	7	Delaware
25	90	21.70	6.90	5	8	Kane	15	90	43.60	16.00	6	8	Dubois
20	90	18.60	7.90	6	8	Kankakee	25	90	12.30	5.90	5	7	Elkhart
25	90	22.40	7.40	6	8	Kendall	20	90	17.70	8.50	5	7	Fayette
20	90	15.40	7.60	6	8	Knox	15	90	25.10	12.00	6	8	Floyd
25	90	15.80	5.80	5	7	Lake	20	90	21.40	9.60	6	8	Fountain
20	90	19.30	7.70	6	8	La Salle	20	90	17.70	8.70	5	7	Franklin
20	90	62.10	19.20	6	8	Lawrence	20	90	12.80	6.50	5	7	Fulton
25	90	17.30	6.40	6	8	Lee	15	90	66.60	20.50	6	8	Gibson
20	90	18.40	8.50	6	8	Livingston	20	90	15.80	7.40	5	7	Grant
20	90	21.20	10.10	6	8	Logan	20	90	37.80	13.70	6	8	Greene
20	90	16.70	8.50	6	9	McDonough	20	90	17.10	8.60	5	8	Hamilton
25	90	17.50	6.00	5	7	McHenry	20	90	17.50	8.80	5	8	Hancock
20	90	18.70	9.20	6	8	McLean	15	90	27.90	12.90	6	8	Harrison
20	90	26.70	11.90	6	8	Macon	20	90	21.60	9.70	6	8	Hendricks
20	90	37.70	13.90	6	9	Macoupin	20	90	17.50	8.30	5	7	Henry
20	90	56.00	17.90	6	9	Madison	20	90	15.30	7.80	5	7	Howard
20	90	71.50	20.90	6	8	Marion	20	90	15.30	6.60	5	7	Huntington
20	90	17.60	8.00	6	8	Marshall	20	90	24.20	11.40	6	8	Jackson
20	90	18.50	9.20	6	8	Mason	20	90	16.00	7.70	5	8	Jasper
15	90	196.10	57.90	6	9	Massac	20	90	22.50	7.80	5	7	Jay
20	90	21.90	10.40	6	8	Menard	20	90	19.50	9.90	5	8	Jefferson
20	90	13.00	6.60	6	9	Mercer	20	90	19.20	9.80	5	8	Jennings
20	90	66.70	20.60	6	9	Monroe	20	90	19.70	9.60	5	8	Johnson
20	90	44.10	15.60	6	8	Montgomery	20	90	60.30	18.80	6	8	Knox
20	90	24.50	11.30	6	9	Morgan	20	90	12.60	6.20	5	7	Kosciusko
20	90	33.20	13.20	6	8	Moultrie	20	90	12.60	5.80	5	7	Lagrange
25	90	17.20	6.20	6	8	Ogle	25	90	17.40	7.00	5	7	Lake
20	90	17.50	8.60	6	8	Peoria	CS	90	13.20	6.20	5	7	La Porte
20	90	93.90	26.00	6	9	Perry	20	90	29.40	12.80	6	8	Lawrence
20	90	24.50	11.00	6	8	Piatt	20	90	16.80	8.20	5	7	Madison
20	90	22.90	10.80	6	9	Pike	20	90	18.70	9.20	5	8	Marion
15	90	123.90	36.10	6	8	Pope	25	90	12.50	6.20	5	7	Marshall
15	90	328.60	104.00	6	9	Pulaski	20	90	38.60	14.10	6	8	Martin
20	90	18.00	7.70	6	8	Putnam	20	90	14.10	7.20	5	7	Miami
20	90	92.90	25.90	6	9	Randolph	20	90	27.70	12.10	6	8	Monroe
20	90	68.90	20.20	6	8	Richland	20	90	20.30	9.40	6	8	Montgomery
25	90	13.00	6.20	6	8	Rock Island	20	90	24.50	10.80	6	8	Morgan
20	90	63.70	20.00	6	9	St. Clair	20	90	17.20	8.30	6	8	Newton
15	90	111.70	30.20	6	8	Saline	20	90	13.10	6.00	5	7	Noble
20	90	25.60	11.60	6	8	Sangamon	20	90	18.50	9.10	5	8	Ohio
20	90	18.60	9.30	6	9	Schuyler	15	90	31.90	13.30	6	8	Orange
20	90	24.80	11.40	6	8	Scott	20	90	29.70	12.40	6	8	Owen
20	90	39.00	14.10	6	8	Shelby	20	90	26.50	11.30	6	8	Parke
20	90	16.60	7.70	6	8	Stark	15	90	40.60	15.90	6	8	Perry
25	90	14.20	5.70	6	8	Stephenson	15	90	56.20	18.20	6	8	Pike
20	90	17.80	8.90	6	8	Tazewell	25	90	15.60	6.50	5	7	Porter
15	90	181.60	53.60	6	9	Union	15	90	90.90	25.30	6	8	Posey
20	90	22.40	10.00	6	8	Vermilion	20	90	13.70	6.90	5	7	Pulaski
20	90	77.30	21.20	6	8	Wabash	20	90	26.10	11.10	6	8	Putnam
20	90	14.50	7.40	6	9	Warren	20	90	21.30	8.10	5	7	Randolph
							20	90	18.30	9.30	5	8	Ripley

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
20	90	17.50	8.80	5	8	Rush	40	90	6.00	3.40	6	9	Kossuth
CS	90	12.20	5.90	5	7	St Joseph	20	90	13.00	7.40	6	9	Lee
20	90	22.70	11.00	6	8	Scott	25	90	8.70	4.90	6	8	Linn
20	90	18.30	9.20	5	8	Shelby	20	90	12.00	6.30	6	9	Louisa
15	90	50.20	18.10	6	8	Spencer	20	90	8.10	4.90	7	10	Lucas
25	90	13.30	6.40	5	7	Starke	40	90	9.20	3.50	6	9	Lyon
20	90	13.60	5.70	5	7	Steuben	20	90	7.70	4.20	7	10	Madison
20	90	43.60	15.00	6	8	Sullivan	20	90	8.30	5.10	7	9	Mahaska
20	90	19.00	9.50	5	8	Switzerland	20	90	7.90	4.70	7	9	Marion
20	90	17.40	8.60	6	8	Tippecanoe	25	90	7.20	4.10	6	9	Marshall
20	90	16.20	8.20	5	7	Tipton	25	90	11.80	4.30	7	10	Mills
20	90	18.10	8.40	5	7	Union	40	90	5.70	3.40	6	8	Mitchell
15	90	68.60	21.40	6	8	Vanderburgh	25	90	9.70	3.90	7	10	Monona
20	90	25.40	10.90	6	8	Vermillion	20	90	8.40	5.30	7	9	Monroe
20	90	34.60	13.10	6	8	Vigo	25	90	10.10	4.30	7	10	Montgomery
20	90	14.30	6.90	5	7	Wabash	20	90	11.90	6.10	6	8	Muscatine
20	90	19.00	9.20	6	8	Warren	35	90	7.80	3.40	7	9	O'Brien
15	90	58.10	19.40	6	8	Warrick	40	90	8.10	3.40	6	9	Osceola
20	90	26.30	12.20	6	8	Washington	20	90	10.40	4.60	7	10	Page
20	90	18.90	8.30	5	7	Wayne	35	90	6.50	3.30	6	9	Palo Alto
20	90	18.10	7.10	5	7	Wells	35	90	8.80	3.60	7	10	Plymouth
20	90	15.30	7.80	5	8	White	35	90	6.60	3.50	7	9	Pocahontas
20	90	14.00	6.20	5	7	Whitley	25	90	7.30	4.20	7	10	Polk
						IOWA	25	90	11.60	4.20	7	10	Pottawattamie
25	90	7.90	4.20	7	10	Adair	25	90	8.10	4.80	6	9	Poweshiek
20	90	8.70	4.30	7	10	Adams	20	90	8.50	4.80	7	10	Ringgold
35	90	6.90	3.70	6	8	Allamakee	30	90	7.20	3.60	7	10	Sac
20	90	8.90	5.60	7	9	Appanoose	25	90	12.90	6.20	6	8	Scott
25	90	7.90	3.90	7	10	Audubon	25	90	8.40	4.00	7	10	Shelby
25	90	7.90	4.30	6	9	Benton	35	90	8.50	3.50	7	9	Sioux
30	90	7.10	4.00	6	9	Black Hawk	25	90	6.90	4.00	7	9	Story
25	90	6.80	3.90	7	10	Boone	25	90	7.60	4.20	6	9	Tama
30	90	6.60	3.80	6	9	Bremer	20	90	9.80	4.70	7	10	Taylor
30	90	7.60	4.10	6	8	Buchanan	20	90	8.20	4.30	7	10	Union
35	90	7.30	3.50	7	10	Buena Vista	20	90	11.20	6.30	6	9	Van Buren
35	90	6.30	3.70	6	9	Butler	20	90	9.30	5.70	7	9	Wapello
30	90	6.80	3.60	7	10	Calhoun	20	90	7.60	4.40	7	10	Warren
25	90	7.40	3.80	7	10	Carroll	20	90	10.50	5.80	6	9	Washington
25	90	8.30	4.10	7	10	Cass	20	90	8.40	5.20	7	10	Wayne
25	90	10.90	5.60	6	8	Cedar	30	90	6.40	3.60	7	9	Webster
40	90	5.70	3.40	6	9	Cerro Gordo	40	90	5.70	3.30	6	9	Winnebago
35	90	7.70	3.50	7	10	Cherokee	35	90	6.50	3.60	6	8	Winneshiek
35	90	6.30	3.60	6	8	Chickasaw	30	90	9.90	3.80	7	10	Woodbury
20	90	8.00	4.60	7	10	Clarke	40	90	5.60	3.20	6	9	Worth
35	90	7.10	3.30	6	9	Clay	35	90	6.00	3.60	6	9	Wright
30	90	7.60	4.00	6	8	Clayton							KANSAS
25	90	13.80	6.00	6	8	Clinton	20	90	11.60	6.10	8	11	Allen
25	90	8.00	3.80	7	10	Crawford	20	90	12.00	6.00	8	10	Anderson
25	90	7.30	4.10	7	10	Dallas	20	90	13.10	5.60	7	10	Atchison
20	90	10.00	5.90	7	9	Davis	15	90	12.60	5.30	7	11	Barber
20	90	8.30	5.00	7	10	Decatur	20	90	11.10	4.50	7	10	Barton
30	90	8.10	4.30	6	8	Delaware	20	90	12.10	6.80	8	11	Bourbon
20	90	12.80	7.20	6	9	Des Moines	20	90	15.00	5.40	7	10	Brown
40	90	7.00	3.20	6	9	Dickinson	15	90	12.70	5.70	8	11	Butler
30	90	9.80	4.70	6	8	Dubuque	20	90	14.50	5.60	8	11	Chase
40	90	6.60	3.20	6	9	Emmet	15	90	12.00	6.10	8	11	Chautauqua
30	90	6.90	3.80	6	8	Fayette	15	90	12.50	7.50	8	11	Cherokee
35	90	6.00	3.50	6	9	Floyd	20	90	8.40	3.40	6	9	Cheyenne
35	90	6.10	3.60	6	9	Franklin	15	90	11.20	4.70	7	10	Clark
25	90	12.10	4.60	7	10	Fremont	20	90	17.30	5.20	7	10	Clay
25	90	7.00	3.80	7	10	Greene	25	90	12.50	4.50	7	10	Cloud
30	90	6.90	4.00	6	9	Grundy	20	90	12.20	5.80	8	10	Coffey
25	90	7.50	4.00	7	10	Guthrie	15	90	11.40	4.90	7	10	Comanche
30	90	6.30	3.70	6	9	Hamilton	15	90	12.90	5.90	8	11	Cowley
40	90	5.70	3.40	6	9	Hancock	15	90	12.10	7.00	8	11	Crawford
30	90	6.60	3.90	6	9	Hardin	25	90	9.40	3.50	6	9	Decatur
25	90	10.00	4.00	7	10	Harrison	20	90	15.80	5.20	7	10	Dickinson
20	90	11.50	6.30	6	9	Henry	20	90	12.60	5.40	7	10	Doniphan
40	90	6.00	3.50	6	8	Howard	20	90	13.90	5.80	7	10	Douglas
35	90	6.20	3.50	6	9	Humboldt	15	90	10.30	4.30	7	10	Edwards
30	90	7.80	3.70	7	10	Ida	15	90	11.80	5.90	8	11	Elk
25	90	8.40	4.90	6	9	Iowa	25	90	12.30	4.30	7	10	Ellis
25	90	11.30	5.40	6	8	Jackson	20	90	11.30	4.50	7	10	Ellsworth
25	90	7.50	4.30	7	9	Jasper	15	90	9.40	4.10	7	9	Finney
20	90	10.40	6.00	6	9	Jefferson	15	90	9.70	4.20	7	10	Ford
25	90	10.20	5.50	6	9	Johnson	20	90	12.60	5.90	7	10	Franklin
25	90	9.30	5.00	6	8	Jones	20	90	19.40	5.70	7	10	Geary
20	90	9.00	5.40	6	9	Keokuk	20	90	9.60	3.90	7	9	Gove

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
25	90	11.80	4.10	7	10	Graham	15	90	25.70	13.00	6	8	Barren
15	90	10.30	4.10	6	9	Grant	15	90	28.20	9.80	5	8	Bath
15	90	9.40	4.10	7	10	Gray	15(2600)	90	40.30	12.90	6	8	Bell
10(5000)	90	9.90	3.70	6	9	Greeley	20	90	18.50	8.90	5	7	Boone
20	90	12.00	5.70	8	11	Greenwood	15	90	26.70	9.90	5	8	Bourbon
10(5000)	90	10.60	3.80	6	9	Hamilton	20	90	22.10	8.80	5	8	Boyd
15	90	14.10	5.60	8	11	Harper	15	90	22.70	10.80	6	8	Boyle
20	90	13.50	5.40	7	11	Harvey	20	90	24.30	9.20	5	8	Bracken
15	90	10.00	4.20	7	9	Haskell	15(2600)	90	27.20	10.40	6	8	Breathitt
20	90	9.60	4.20	7	10	Hodgeman	15	90	34.80	14.20	6	8	Breckinridge
20	90	18.00	5.70	7	10	Jackson	15	90	24.70	12.10	6	8	Bullitt
20	90	15.00	5.70	7	10	Jefferson	15	90	38.10	15.90	6	8	Butler
25	90	11.00	4.10	7	10	Jewell	15	90	90.60	26.40	6	8	Caldwell
20	90	12.30	6.00	7	10	Johnson	15	90	110.60	30.40	6	8	Calloway
15	90	9.90	4.00	6	9	Kearny	20	90	19.40	8.90	5	7	Campbell
15	90	13.20	5.40	7	11	Kingman	15	90	278.20	85.20	6	8	Carlisle
15	90	10.80	4.60	7	10	Kiowa	20	90	19.30	9.60	5	8	Carroll
15	90	12.20	7.10	8	11	Labette	20	90	24.10	9.00	5	8	Carter
20	90	9.20	4.00	7	9	Lane	15(2600)	90	22.50	11.40	6	8	Casey
20	90	12.60	5.70	7	10	Leavenworth	15	90	60.30	21.10	6	8	Christian
25	90	11.30	4.40	7	10	Lincoln	15	90	26.90	10.10	5	8	Clark
20	90	11.90	6.30	8	10	Linn	15(2600)	90	29.60	11.50	6	8	Clay
20	90	8.80	3.60	6	9	Logan	15(2600)	90	25.00	12.20	6	8	Clinton
20	90	14.40	5.70	8	10	Lyon	15	90	103.00	28.70	6	8	Crittenden
20	90	12.60	5.10	7	11	McPherson	15(2600)	90	24.10	12.30	6	8	Cumberland
20	90	13.90	5.40	7	11	Marion	15	90	52.60	18.70	6	8	Daviess
20	90	18.00	5.30	7	10	Marshall	15	90	28.90	13.80	6	8	Edmonson
15	90	10.50	4.30	7	10	Meade	15	90	25.50	9.40	5	8	Elliott
20	90	12.10	6.10	7	10	Miami	15(2600)	90	26.60	10.40	6	8	Estill
25	90	11.30	4.20	7	10	Mitchell	15	90	25.10	10.30	5	8	Fayette
15	90	11.70	6.30	8	11	Montgomery	15	90	27.40	9.40	5	8	Fleming
20	90	17.50	5.70	7	10	Morris	15(2600)	90	25.90	9.70	6	8	Floyd
15	90	11.30	3.90	6	9	Morton	15	90	22.80	10.20	5	8	Franklin
20	90	17.80	5.50	7	10	Nemaha	15	90	235.00	67.60	7	8	Fulton
15	90	11.60	6.40	8	11	Neosho	20	90	19.00	9.30	5	8	Gallatin
20	90	10.20	4.10	7	10	Ness	15(2600)	90	23.40	10.70	6	8	Garrard
25	90	10.90	3.90	7	10	Norton	20	90	21.80	9.30	5	8	Grant
20	90	14.50	5.80	7	10	Osage	15	90	143.00	42.30	6	8	Graves
25	90	10.90	4.10	7	10	Osborne	15	90	30.30	13.90	6	8	Grayson
20	90	12.40	4.70	7	10	Ottawa	15	90	23.30	12.20	6	8	Green
20	90	10.70	4.40	7	10	Pawnee	20	90	22.60	8.70	5	8	Greenup
25	90	11.00	4.00	7	10	Phillips	15	90	40.80	16.00	6	8	Hancock
20	90	22.90	5.90	7	10	Pottawatomie	15	90	25.70	12.70	6	8	Hardin
15	90	11.80	5.00	7	10	Pratt	15(2600)	90	40.10	12.70	6	8	Harlan
25	90	8.40	3.20	6	9	Rawlins	15	90	25.80	9.60	5	8	Harrison
15	90	12.70	5.20	7	11	Reno	15	90	25.70	12.90	6	8	Hart
25	90	12.60	4.40	7	10	Republic	15	90	70.90	22.00	6	8	Henderson
20	90	11.80	4.80	7	10	Rice	15	90	21.10	10.20	5	8	Henry
20	90	22.90	5.90	7	10	Riley	15	90	194.50	57.20	6	8	Hickman
25	90	11.80	4.10	7	10	Rooks	15	90	63.30	21.50	6	8	Hopkins
20	90	11.30	4.30	7	10	Rush	15(2600)	90	26.20	10.80	6	8	Jackson
25	90	11.60	4.30	7	10	Russell	15	90	24.70	11.90	6	8	Jefferson
20	90	12.60	4.90	7	10	Saline	15	90	24.20	10.40	6	8	Jessamine
20	90	9.00	3.90	7	9	Scott	15(2600)	90	24.90	9.50	6	8	Johnson
15	90	14.00	5.60	8	11	Sedgwick	20	90	19.00	9.00	5	7	Kenton
15	90	11.00	4.30	7	9	Seward	20(2500)	90	28.90	11.00	6	8	Knott
20	90	17.50	5.90	7	10	Shawnee	15(2600)	90	35.80	12.40	6	8	Knox
25	90	9.80	3.80	6	9	Sheridan	15	90	24.70	12.50	6	8	Larue
20	90	8.80	3.50	6	9	Sherman	15(2600)	90	27.60	11.50	6	8	Laurel
25	90	10.40	4.00	7	10	Smith	15	90	23.10	9.10	5	8	Lawrence
15	90	11.30	4.70	7	10	Stafford	15(2600)	90	26.90	10.50	6	8	Lee
15	90	10.80	3.90	6	9	Stanton	15(2600)	90	32.20	11.60	6	8	Leslie
15	90	10.70	4.10	6	9	Stevens	20(2500)	90	34.10	11.70	6	8	Letcher
15	90	13.90	5.80	8	11	Sumner	15	90	25.00	9.00	5	8	Lewis
20	90	8.50	3.40	6	9	Thomas	15(2600)	90	23.00	10.90	6	8	Lincoln
20	90	11.80	4.10	7	10	Trego	15	90	124.90	36.70	6	8	Livingston
20	90	22.00	5.90	7	10	Wabaunsee	15	90	39.80	16.90	6	8	Logan
20	90	9.40	3.60	6	9	Wallace	15	90	104.50	29.10	6	8	Lyon
25	90	16.50	5.00	7	10	Washington	15	90	161.70	46.40	6	8	McCracken
20	90	9.30	3.70	6	9	Wichita	15(2600)	90	29.00	12.20	6	8	McCreary
15	90	11.50	6.00	8	11	Wilson	15	90	56.90	19.90	6	8	McLean
20	90	11.60	5.90	8	11	Woodson	15(2600)	90	25.30	10.40	6	8	Madison
20	90	12.20	5.90	7	10	Wyandotte	15(2600)	90	25.90	9.70	6	8	Magoffin
							15	90	22.20	11.50	6	8	Marion
						KENTUCKY	15	90	120.50	34.20	6	8	Marshall
15(2600)	90	23.00	12.00	6	8	Adair	15(2600)	90	24.50	9.40	6	8	Martin
15	90	27.40	13.60	6	8	Allen	15	90	25.60	9.10	5	8	Mason
15	90	22.80	10.50	6	8	Anderson	15	90	28.40	13.30	6	8	Meade
15	90	326.60	105.20	6	8	Ballard	15	90	27.70	9.90	6	8	Menifee

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
15	90	22.60	10.80	6	8	Mercer	5	90	16.10	7.70	9	11	Red River
15	90	24.10	12.50	6	8	Metcalfe	5	90	18.70	9.50	8	11	Richland
15	90	24.80	12.70	6	8	Monroe	5	90	16.20	7.10	9	11	Sabine
15	90	27.90	10.00	5	8	Montgomery	0	140	12.80	5.60	11	13	St. Bernard
15	90	26.30	9.60	5	8	Morgan	0	123	13.10	5.70	11	13	St. Charles
15	90	52.00	19.30	6	8	Muhlenberg	0	103	14.50	6.60	10	12	St. Helena
15	90	23.00	11.70	6	8	Nelson	0	115	13.60	5.80	11	12	St. James
15	90	27.50	9.60	5	8	Nicholas	0	115	13.50	5.80	11	12	St. John the Baptist
15	90	43.30	17.50	6	8	Ohio	0	102	12.70	6.10	10	12	St. Landry
15	90	21.80	10.70	5	8	Oldham	0	108	12.60	5.70	11	12	St. Martin
15	90	21.10	9.50	5	8	Owen	0	120	12.30	5.40	11	12	St. Mary
15(2600)	90	27.20	10.70	6	8	Owsley	5	115	14.40	6.20	10	12	St. Tammany
20	90	22.90	9.20	5	8	Pendleton	0	107	14.50	6.50	10	12	Tangipahoa
20(2500)	90	30.50	11.30	6	8	Perry	5	90	16.90	8.60	9	11	Tensas
20(2500)	90	27.90	10.40	6	8	Pike	0	130	12.00	5.20	12	13	Terrebonne
15	90	27.40	10.20	6	8	Powell	5	90	19.80	9.70	8	11	Union
15(2600)	90	24.70	11.40	6	8	Pulaski	0	120	12.00	5.50	11	12	Vermilion
15	90	26.00	9.40	5	8	Robertson	5	94	14.80	6.40	9	11	Vernon
15(2600)	90	24.80	11.00	6	8	Rockcastle	0	108	15.10	6.70	10	12	Washington
15	90	27.30	9.50	5	8	Rowan	5	90	17.50	8.70	8	11	Webster
15(2600)	90	23.50	11.80	6	8	Russell	0	105	14.40	6.20	10	12	W. Baton Rouge
15	90	24.60	9.90	5	8	Scott	5	90	23.00	11.20	8	11	West Carroll
15	90	22.00	10.70	5	8	Shelby	0	100	14.00	6.40	10	12	West Feliciana
15	90	32.60	14.70	6	8	Simpson	5	90	16.20	8.10	9	11	Winn
15	90	22.60	11.20	6	8	Spencer							
15	90	22.60	11.90	6	8	Taylor							
15	90	46.10	18.70	6	8	Todd	80(600)	92	37.10	10.30	4	6	MAINE Androscoggin
15	90	84.00	25.30	6	8	Trigg	100(700)	90	27.60	10.00	4	6	Aroostook
20	90	20.40	10.10	5	8	Trimble	70(500)	94	36.80	9.80	4	6	Cumberland
15	90	92.50	26.20	6	8	Union	CS	90	32.50	10.20	4	6	Franklin
15	90	31.50	14.30	6	8	Warren	60(500)	91	26.10	8.80	4	6	Hancock
15	90	22.20	11.40	6	8	Washington	70(500)	91	32.20	9.60	4	6	Kennebec
15(2600)	90	25.30	11.90	6	8	Wayne	50(500)	97	25.30	8.70	4	6	Knox
15	90	78.00	24.00	6	8	Webster	50(500)	97	29.60	9.30	4	6	Lincoln
15(2600)	90	34.60	12.50	6	8	Whitley	90(700)	90	38.10	10.70	4	6	Oxford
15(2600)	90	27.10	10.20	6	8	Wolfe	90(700)	90	27.90	9.30	4	6	Penobscot
15	90	23.60	10.30	6	8	Woodford	CS	90	29.90	10.00	4	6	Piscataquis
							50(500)	99	31.70	9.40	4	6	Sagadahoc
							CS	90	30.00	9.80	4	6	Somerset
0	105	12.20	5.70	11	12	Acadia	70(500)	93	26.50	9.00	4	6	Waldo
0	100	12.60	6.00	10	12	Allen	70(500)	90	34.00	8.90	4	6	Washington
0	100	14.00	5.90	11	12	Ascension	70(500)	96	40.50	10.60	4	6	York
0	115	13.20	5.70	11	12	Assumption							
5	95	13.60	6.80	9	11	Avoyelles							
5	98	13.90	6.10	10	12	Beauregard	CS	90	17.60	6.30	5	7	MARYLAND Allegany
5	90	17.90	8.90	8	11	Bienville	25	90	18.10	6.20	7	10	Anne Arundel
5	90	17.20	8.40	8	11	Bossier	25	90	20.70	6.40	7	9	Baltimore
5	90	16.80	8.20	8	11	Caddo	25	90	16.80	6.20	8	10	Calvert
0	108	12.70	5.60	11	12	Calcasieu	25	94	17.60	6.10	7	10	Caroline
5	90	17.00	8.70	9	11	Caldwell	30(900)	90	19.20	6.40	6	9	Carroll
0	120	11.70	5.10	11	13	Cameron	25	90	28.20	7.50	7	9	Cecil
5	90	15.80	8.20	9	11	Catahoula	25	90	17.70	6.30	8	10	Charles
5	90	18.50	9.20	8	11	Claiborne	25	90	17.70	6.30	8	10	Charles
5	92	15.30	7.90	9	11	Concordia	20	96	15.80	6.00	7	10	Dorchester
5	90	16.20	7.50	9	11	De Soto	30(900)	90	18.60	6.30	6	9	Frederick
0	105	14.50	6.20	10	12	E. Baton Rouge	CS	90	16.30	6.40	5	7	Garrett
5	90	22.90	11.10	8	11	East Carroll	25	90	24.10	6.80	7	9	Harford
0	102	14.40	6.60	10	12	East Feliciana	25	90	18.80	6.30	7	10	Howard
0	98	12.60	6.10	10	12	Evangeline	25	90	20.80	6.40	7	10	Kent
5	90	17.40	8.90	9	11	Franklin	25	90	18.10	6.30	7	10	Montgomery
5	90	14.90	7.30	9	11	Grant	25	90	17.50	6.20	7	10	Prince George's
0	112	12.50	5.60	11	12	Iberia	25	90	18.70	6.20	7	10	Queen Anne's
0	108	14.30	6.00	11	12	Iberville	20	90	16.70	6.20	8	10	St. Mary's
5	90	17.10	8.60	8	11	Jackson	20	110	13.00	5.60	7	11	Somerset
0	130	12.80	5.60	12	13	Jefferson	20	91	16.90	6.10	7	10	Talbot
0	105	12.30	5.70	11	12	Jefferson Davis	CS	90	19.00	6.30	5	8	Washington
0	107	12.50	5.80	11	12	Lafayette	20	109	13.60	5.60	7	10	Wicomico
0	130	12.60	5.50	12	13	Lafourche	20	115	12.30	5.40	7	10	Worcester
5	90	15.40	7.90	9	11	La Salle							
5	90	18.20	9.10	8	11	Lincoln							
0	108	14.50	6.20	10	12	Livingston							
5	90	19.00	9.60	8	11	Madison	25	115	23.50	6.60	5	7	MASSACHUSETTS Barnstable
5	90	20.80	10.30	8	11	Morehouse	50(900)	90*	25.50	8.80	5	7	Berkshire
5	90	15.70	7.50	9	11	Natchitoches	30	110	27.60	8.10	5	7	Bristol
0	126	12.90	5.70	11	13	Orleans	25	118	20.30	6.20	5	7	Dukes
5	90	18.50	9.30	8	11	Ouachita	50(500)	104	36.50	9.20	5	7	Essex
0	146	11.80	5.10	12	13	Plaquemines	50(900)	90*	25.80	8.80	5	7	Franklin
0	102	14.00	6.30	10	12	Pointe Coupee	35	95	26.10	8.60	5	7	Hampden
5	93	14.10	7.00	9	11	Rapides	40	93*	25.60	8.70	5	7	Hampshire
							40	100	32.70	8.90	5	7	Middlesex

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
25	118	16.80	5.60	5	7	Nantucket	35	90	8.00	3.70	5	6	Saginaw
40	105	29.70	8.70	5	7	Norfolk	25	90	10.50	4.10	4	6	St. Clair
30	112	27.90	7.90	5	7	Plymouth	25	90	12.20	5.50	5	7	St. Joseph
40	105	32.80	8.90	5	7	Suffolk	30	90	8.40	3.80	4	6	Sanilac
50(900)	97	27.10	8.60	5	7	Worcester	70	90	5.60	1.90	4	6	Schoolcraft
							30	90	9.40	4.00	5	7	Shiawassee
							30	90	8.00	3.70	4	6	Tuscola
						MICHIGAN	CS	90	11.40	5.20	5	7	Van Buren
50	90	7.30	3.20	4	6	Alcona	20	90	12.50	4.70	5	7	Washtenaw
70	90	5.90	1.80	4	6	Alger	20	90	12.40	4.50	5	7	Wayne
CS	90	10.50	4.70	5	7	Allegan	60	90	6.10	3.20	4	6	Wexford
50	90	7.30	2.80	4	6	Alpena							
60	90	5.60	2.80	4	6	Antrim							
40	90	7.00	3.40	4	6	Arenac							
70	90	8.60	1.90	4	6	Baraga							
35	90	10.60	4.40	5	7	Barry	60	90	6.70	1.80	5	7	Aitkin
35	90	7.60	3.60	4	6	Bay	50	90	5.90	2.60	6	8	Anoka
CS	90	5.70	2.90	4	6	Benzie	60	90	8.40	2.10	5	7	Becker
CS	90	11.70	5.50	5	7	Berrien	70	90	6.60	1.70	4	6	Beltrami
25	90	12.70	5.40	5	7	Branch	50	90	6.90	1.90	6	8	Benton
25	90	12.00	4.90	5	7	Calhoun	50	90	10.90	2.60	6	8	Big Stone
CS	90	11.80	5.60	5	7	Cass	50	90	5.90	2.80	6	9	Blue Earth
60	90	5.60	2.70	4	6	Charlevoix	50	90	6.60	2.80	6	9	Brown
60	90	5.90	2.10	4	6	Cheboygan	60	90	5.60	1.70	5	7	Carlton
70	90	6.30	2.10	4	6	Chippewa	50	90	5.90	2.70	6	8	Carver
40	90	6.60	3.30	4	6	Clare	60	90	7.30	1.80	5	7	Cass
30	90	9.40	4.00	5	7	Clinton	50	90	9.20	2.50	6	8	Chippewa
50	90	5.90	2.90	4	6	Crawford	50	90	5.50	2.60	6	7	Chisago
60	90	6.10	2.60	4	6	Delta	50	90	7.30	1.90	5	7	Clay
60	90	6.30	2.60	4	6	Dickinson	70	90	6.50	1.70	4	7	Clearwater
30	90	11.30	4.50	5	7	Eaton	60	90	7.40	1.70	4	6	Cook
CS	90	5.60	2.70	4	6	Emmet	50	90	7.20	3.10	6	9	Cottonwood
30	90	9.30	4.00	5	7	Genesee	60	90	7.60	1.90	5	7	Crow Wing
40	90	6.80	3.30	4	6	Gladwin	50	90	5.50	2.70	6	8	Dakota
60	90	7.20	1.80	4	6	Gogebic	50	90	5.50	2.90	6	8	Dodge
60	90	5.60	2.80	4	6	Grand Traverse	50	90	10.40	2.40	5	8	Douglas
35	90	8.20	3.80	5	7	Gratiot	50	90	5.80	3.10	6	9	Faribault
20	90	13.10	5.30	5	7	Hillsdale	40	90	5.70	3.30	6	8	Fillmore
70	90	10.60	2.00	4	6	Houghton	50	90	5.60	3.10	6	9	Freeborn
35	90	7.80	3.60	4	6	Huron	50	90	5.40	2.80	6	8	Goodhue
25	90	11.30	4.40	5	7	Ingham	50	90	10.90	2.40	5	8	Grant
35	90	9.20	4.10	5	7	Ionia	50	90	5.70	2.70	6	8	Hennepin
40	90	7.10	3.30	4	6	Iosco	40	90	6.30	3.40	6	8	Houston
60	90	6.80	2.20	4	6	Iron	60	90	8.00	1.90	5	7	Hubbard
40	90	7.40	3.60	5	6	Isabella	50	90	5.80	2.30	6	7	Isanti
25	90	12.20	4.80	5	7	Jackson	70	90	6.20	1.70	4	6	Itasca
30	90	11.40	5.00	5	7	Kalamazoo	40	90	6.90	3.10	6	9	Jackson
60	90	5.70	2.80	4	6	Kalkaska	60	90	6.00	1.80	5	7	Kanabec
35	90	8.70	4.10	5	7	Kent	50	90	8.40	2.40	6	8	Kandiyohi
90	90	10.20	1.90	4	6	Keweenaw	60	90	4.60	1.30	4	6	Kittson
50	90	6.80	3.40	5	7	Lake	70	90	5.00	1.30	4	6	Koochiching
25	90	9.40	4.00	4	6	Lapeer	50	90	10.10	2.60	6	8	Lac qui Parle
CS	90	5.60	2.80	4	6	Leelanau	60	90	5.70	1.60	4	6	Lake
20	90	14.60	5.30	5	7	Lenawee	60	90	4.90	1.30	4	6	Lake of the Woods
25	90	11.10	4.20	5	7	Livingston	50	90	5.80	2.80	6	8	Le Sueur
70	90	5.50	1.80	4	6	Luce	50	90	9.40	2.70	6	9	Lincoln
60	90	5.70	2.00	4	6	Mackinac	50	90	8.40	2.80	6	9	Lyon
25	90	11.40	4.20	4	6	Macomb	50	90	6.60	2.70	6	8	McLeod
60	90	6.30	3.20	4	6	Manistee	60	90	7.00	1.80	5	7	Mahnomen
70	90	6.80	1.80	4	6	Marquette	60	90	5.20	1.50	4	6	Marshall
CS	90	6.90	3.40	5	7	Mason	50	90	6.20	3.10	6	9	Martin
40	90	7.10	3.60	5	7	Mecosta	50	90	7.60	2.50	6	8	Meeker
60	90	6.00	2.80	4	6	Menominee	60	90	6.60	1.90	5	7	Mille Lacs
35	90	7.50	3.60	4	6	Midland	60	90	7.90	2.00	5	8	Morrison
50	90	6.00	3.10	4	6	Missaukee	50	90	5.60	3.10	6	8	Mower
20	90	15.70	5.30	5	7	Monroe	50	90	8.20	3.20	6	9	Murray
35	90	8.10	3.80	5	7	Montcalm	50	90	6.00	2.80	6	8	Nicollet
50	90	6.30	2.90	4	6	Montmorency	40	90	7.90	3.20	6	9	Nobles
40	90	8.10	4.00	5	7	Muskegon	60	90	6.60	1.80	5	7	Norman
40	90	7.40	3.70	5	7	Newaygo	50	90	5.50	3.00	6	8	Olmsted
25	90	11.20	4.20	5	7	Oakland	60	90	9.90	2.30	5	8	Otter Tail
CS	90	7.30	3.60	5	7	Oceana	70	90	5.30	1.50	4	7	Pennington
40	90	6.50	3.20	4	6	Ogemaw	60	90	5.70	1.90	5	7	Pine
70	90	9.10	1.90	4	6	Ontonagon	50	90	10.00	3.30	6	9	Pipestone
50	90	6.80	3.40	4	6	Osceola	60	90	5.60	1.60	4	7	Polk
50	90	6.30	3.00	4	6	Oscoda	50	90	10.30	2.40	6	8	Pope
50	90	5.70	2.80	4	6	Otsego	50	90	5.60	2.70	6	8	Ramsey
40	90	8.40	4.10	5	7	Ottawa	60	90	5.50	1.60	4	7	Red Lake
50	90	6.80	2.40	4	6	Presque Isle	50	90	7.70	2.90	6	9	Redwood
50	90	6.10	3.00	4	6	Roscommon	50	90	7.90	2.70	6	8	Renville
							50	90	5.60	2.80	6	8	Rice

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
40	90	9.60	3.40	6	9	Rock	0	101	15.10	7.30	9	11	Pike
60	90	4.60	1.20	4	6	Roseau	10	90	36.80	15.90	7	10	Pontotoc
60	90	5.60	1.60	4	6	St. Louis	10	90	39.40	17.00	7	9	Prentiss
50	90	5.80	2.70	6	8	Scott	10	90	53.90	20.20	7	10	Quitman
50	90	6.20	2.50	6	8	Sherburne	5	94	18.70	9.40	8	11	Rankin
50	90	6.50	2.80	6	8	Sibley	5	94	18.50	9.40	8	11	Scott
50	90	7.30	2.00	6	8	Stearns	5	90	24.50	11.70	8	11	Sharkey
50	90	5.50	2.90	6	8	Steele	5	96	17.80	8.90	9	11	Simpson
50	90	11.30	2.50	6	8	Stevens	5	97	17.90	8.90	9	11	Smith
50	90	10.20	2.50	6	8	Swift	5	120	16.00	6.70	10	12	Stone
60	90	9.00	2.20	5	8	Todd	10	90	32.40	13.90	8	10	Sunflower
50	90	10.90	2.50	5	8	Traverse	10	90	43.30	17.90	7	10	Tallahatchie
50	90	5.50	2.80	6	8	Wabasha	10	90	66.70	23.40	7	10	Tate
60	90	9.40	2.20	5	7	Wadena	10	90	47.90	19.20	7	9	Tippah
50	90	5.60	2.90	6	9	Waseca	10	90	37.40	16.30	7	9	Tishomingo
50	90	5.50	2.70	6	8	Washington	10	90	88.50	27.30	7	10	Tunica
50	90	6.60	2.90	6	9	Watsonwan	10	90	41.60	17.80	7	10	Union
50	90	9.00	2.30	5	8	Wilkin	0	104	15.60	7.30	9	11	Walthall
50	90	5.70	3.10	6	8	Winona	5	90	19.20	9.60	8	11	Warren
50	90	6.50	2.50	6	8	Wright	10	90	31.20	13.60	8	11	Washington
50	90	8.50	2.60	6	9	Yellow Medicine	5	107	18.00	8.20	9	11	Wayne
							10	90	28.10	13.40	7	10	Webster
						MISSISSIPPI	0	107	14.30	7.00	9	11	Wilkinson
5	93	15.30	7.90	9	11	Adams	5	92	22.10	11.40	8	10	Winston
10	90	44.30	18.60	7	9	Alcorn	10	90	39.30	16.60	7	10	Yalobusha
0	108	14.70	7.20	9	11	Amite	5	90	23.70	11.50	8	11	Yazoo
5	90	23.20	11.80	8	10	Attala							
10	90	57.10	20.80	7	9	Benton							MISSOURI
10	90	40.40	16.60	8	10	Bolivar	20	90	11.20	6.50	7	10	Adair
10	90	35.20	15.00	7	10	Calhoun	20	90	11.60	5.30	7	10	Andrew
10	90	29.90	13.80	8	10	Carroll	20	90	12.50	4.90	7	10	Atchison
10	90	30.20	13.90	7	10	Chickasaw	20	90	18.80	9.70	7	9	Audrain
10	90	24.40	12.20	7	10	Choctaw	15	90	18.40	9.60	8	11	Barry
5	91	17.40	8.80	9	11	Claiborne	15	90	13.70	8.00	8	11	Barton
5	103	18.90	8.80	9	11	Clarke	20	90	12.30	6.90	7	10	Bates
10	90	25.40	12.50	7	10	Clay	20	90	15.60	8.70	7	10	Benton
10	90	52.50	19.90	7	10	Coahoma	15	90	114.70	32.60	7	9	Bollinger
5	94	17.30	8.70	9	11	Copiah	20	90	18.00	9.30	7	10	Boone
5	101	17.20	8.30	9	11	Covington	20	90	12.00	5.40	7	10	Buchanan
10	90	91.90	27.60	7	10	De Soto	15	90	115.20	32.30	7	9	Butler
5	109	16.80	7.60	9	11	Forrest	20	90	11.00	5.80	7	10	Caldwell
0	95	15.50	7.80	9	11	Franklin	20	90	21.20	10.60	7	10	Callaway
0	123	14.50	6.40	10	12	George	20	90	20.00	10.30	7	10	Camden
5	115	15.40	7.00	9	11	Greene	15	90	133.60	40.40	6	9	Cape Girardeau
10	90	35.90	15.20	7	10	Grenada	20	90	11.90	6.70	7	10	Carroll
5	125	14.50	6.00	10	12	Hancock	15	90	66.40	21.90	7	10	Carter
5	130	14.40	6.10	10	12	Harrison	20	90	12.10	6.40	7	10	Cass
5	90	18.90	9.50	8	11	Hinds	20	90	15.40	8.50	7	10	Cedar
5	90	25.40	12.30	8	10	Holmes	20	90	12.60	7.60	7	10	Chariton
5	90	27.30	12.80	8	11	Humphreys	15	90	22.80	11.10	8	10	Christian
5	90	24.30	11.60	8	11	Issaquena	20	90	12.60	7.40	6	9	Clark
10	90	30.20	14.00	7	10	Itawamba	20	90	12.00	6.00	7	10	Clay
0	135	12.50	5.90	10	12	Jackson	20	90	11.50	5.70	7	10	Clinton
5	100	18.00	8.80	9	11	Jasper	20	90	21.60	10.70	7	10	Cole
5	93	16.20	8.20	9	11	Jefferson	20	90	16.10	8.70	7	10	Cooper
5	100	16.90	8.20	9	11	Jefferson Davis	20	90	40.50	15.50	7	9	Crawford
5	105	17.70	8.30	9	11	Jones	20	90	16.40	8.90	8	11	Dade
5	95	19.50	9.90	8	11	Kemper	20	90	19.20	9.90	7	10	Dallas
10	90	48.00	19.10	7	10	Lafayette	20	90	10.30	5.60	7	10	Daviess
5	107	16.60	7.40	9	11	Lamar	20	90	10.80	5.50	7	10	Dekalb
5	98	18.90	9.20	8	11	Lauderdale	20	90	40.50	15.90	7	10	Dent
0	97	16.60	8.10	9	11	Lawrence	15	90	27.30	12.90	7	10	Douglas
5	92	19.70	10.50	8	11	Leake	10	90	237.60	76.20	7	9	Dunklin
10	90	33.40	14.70	7	10	Lee	20	90	41.40	15.10	7	9	Franklin
10	90	31.90	14.00	8	10	Leflore	20	90	27.90	12.60	7	9	Gasconade
0	96	16.30	8.10	9	11	Lincoln	20	90	9.90	5.20	7	10	Gentry
10	90	24.40	11.90	7	10	Lowndes	20	90	20.60	10.40	8	10	Greene
5	90	20.70	10.50	8	11	Madison	20	90	9.80	5.70	7	10	Grundy
0	105	16.40	7.60	9	11	Marion	20	90	9.40	5.30	7	10	Harrison
10	90	61.20	21.70	7	10	Marshall	20	90	13.10	7.80	7	10	Henry
10	90	26.70	13.00	7	10	Monroe	20	90	17.00	9.10	7	10	Hickory
10	90	28.30	13.50	8	10	Montgomery	20	90	12.40	5.30	7	10	Holt
5	93	19.20	10.30	8	11	Neshoba	20	90	15.50	8.60	7	10	Howard
5	96	18.60	9.40	8	11	Newton	15	90	43.00	17.40	7	10	Howell
5	92	21.80	10.90	8	10	Noxubee	20	90	69.10	21.90	7	9	Iron
10	90	24.60	12.20	7	10	Oktibbeha	20	90	12.00	6.10	7	10	Jackson
10	90	53.30	20.00	7	10	Panola	15	90	14.70	8.40	8	11	Jasper
5	115	16.10	6.80	10	12	Pearl River	20	90	59.80	19.20	6	9	Jefferson
5	112	16.40	7.30	9	11	Perry	20	90	12.50	7.40	7	10	Johnson

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
20	90	12.30	7.30	7	9	Knox	CS	90*	114.30	31.30	4	6	Flathead
20	90	23.30	11.30	7	10	Laclede	CS	90	99.20	26.30	4	6	Gallatin
20	90	11.90	6.40	7	10	Lafayette	25(3000)	90	16.30	3.80	4	6	Garfield
15	90	17.60	9.30	8	11	Lawrence	CS	90	39.90	9.00	4	6	Glacier
20	90	14.50	8.10	6	9	Lewis	25(4100)	90	15.50	5.70	4	6	Golden Valley
20	90	30.80	13.00	6	9	Lincoln	CS	90	42.70	13.00	4	6	Granite
20	90	10.90	6.30	7	10	Linn	CS	90	11.50	3.20	4	6	Hill
20	90	10.70	6.10	7	10	Livingston	CS	90	87.70	22.20	4	6	Jefferson
15	90	16.30	8.80	8	11	McDonald	CS	90	18.40	6.10	4	6	Judith Basin
20	90	12.80	7.80	7	10	Macon	CS	90*	124.10	42.70	4	6	Lake
15	90	86.50	25.10	7	9	Madison	CS	90	86.10	21.50	4	6	Lewis and Clark
20	90	26.90	12.50	7	10	Maries	CS	90*	21.70	5.00	4	6	Liberty
20	90	17.40	9.00	6	9	Marion	CS	90*	41.40	12.60	4	6	Lincoln
20	90	8.90	5.40	7	10	Mercer	30(2600)	90	15.90	3.80	4	6	McCone
20	90	21.50	10.80	7	10	Miller	CS	90*	116.30	32.00	4	6	Madison
15	90	339.50	105.60	6	9	Mississippi	CS	90	63.80	18.80	4	6	Meagher
20	90	18.40	9.50	7	10	Moniteau	CS	90*	42.40	13.70	4	6	Mineral
20	90	16.80	9.00	7	9	Monroe	20(3300)	90*	60.10	18.40	4	6	Missoula
20	90	24.50	11.50	7	9	Montgomery	25(4100)	90	11.40	4.00	4	6	Musselshell
20	90	17.80	9.30	7	10	Morgan	CS	90	69.40	20.80	4	6	Park
15	90	338.80	111.10	7	9	New Madrid	25(3000)	90	10.90	3.50	4	6	Petroleum
15	90	15.40	8.60	8	11	Newton	CS	90	12.50	3.40	4	6	Phillips
20	90	11.00	5.00	7	10	Nodaway	CS	90*	28.80	8.20	4	6	Pondera
15	90	58.40	20.30	7	10	Oregon	30(3700)	90	13.60	4.10	4	6	Powder River
20	90	25.60	12.00	7	10	Osage	CS	90	56.40	16.00	4	6	Powell
15	90	34.00	14.40	7	10	Ozark	25(3000)	90	10.40	3.40	4	6	Prairie
10	90	314.20	106.10	7	9	Pemiscot	CS	90*	32.30	9.60	4	6	Ravalli
15	90	99.00	27.70	6	9	Perry	25(3000)	90	12.00	3.10	4	6	Richland
20	90	14.80	8.40	7	10	Pettis	30(2600)	90	19.90	4.10	4	6	Roosevelt
20	90	31.80	13.60	7	10	Phelps	20(3600)	90	11.90	3.80	4	6	Rosebud
20	90	23.30	11.00	6	9	Pike	CS	90*	48.10	14.10	4	6	Sanders
20	90	12.30	5.70	7	10	Platte	30(2600)	90	24.30	4.20	4	6	Sheridan
20	90	17.70	9.30	7	10	Polk	CS	90	56.90	16.90	4	6	Silver Bow
20	90	26.80	12.60	7	10	Pulaski	25(4100)	90	19.20	7.30	4	6	Stillwater
20	90	9.50	5.80	7	10	Putnam	25(4100)	90	32.30	10.60	4	6	Sweet Grass
20	90	18.90	9.60	6	9	Ralls	15(3400)	90	36.10	10.50	4	6	Teton
20	90	14.30	8.20	7	10	Randolph	15(3400)	90*	33.40	7.40	4	6	Toole
20	90	11.70	6.20	7	10	Ray	20(3600)	90	11.80	3.80	4	6	Treasure
15	90	61.50	20.70	7	9	Reynolds	25(3000)	90	21.70	4.10	4	6	Valley
15	90	89.30	25.90	7	10	Ripley	CS	90	20.50	7.30	4	6	Wheatland
20	90	46.70	16.00	6	9	St. Charles	30(3700)	90	8.50	2.90	4	6	Wibaux
20	90	14.50	8.30	7	10	St. Clair	20(3600)	90	12.80	4.90	4	6	Yellowstone
20	90	84.50	23.80	6	9	Ste. Genevieve							
20	90	74.00	22.20	7	9	St. Francois							NEBRASKA
20	90	56.30	17.90	6	9	St. Louis	25	90	11.60	4.00	7	10	Adams
20	90	13.00	7.70	7	10	Saline	30	90	12.70	4.00	7	10	Antelope
20	90	10.40	6.10	7	9	Schuyler	25	90	9.60	3.50	5	8	Arthur
20	90	11.40	6.60	7	9	Scotland	20	90	12.60	4.30	5	7	Banner
15	90	242.60	75.50	6	9	Scott	25	90	11.50	3.40	6	9	Blaine
15	90	53.70	19.20	7	10	Shannon	25	90	13.20	4.10	7	10	Boone
20	90	14.70	8.30	7	9	Shelby	20	90	12.40	4.10	5	7	Box Butte
15	90	194.70	60.20	7	9	Stoddard	35	90	16.50	3.80	6	9	Boyd
15	90	21.30	10.70	8	11	Stone	30	90	13.20	3.60	6	9	Brown
20	90	10.10	6.00	7	10	Sullivan	25	90	10.70	3.90	7	10	Buffalo
15	90	25.30	12.10	8	10	Taney	25	90	11.00	4.00	7	10	Burt
20	90	34.90	14.30	7	10	Texas	25	90	17.00	4.50	7	10	Butler
20	90	12.60	7.40	8	10	Vernon	25	90	12.40	4.40	7	10	Cass
20	90	31.50	13.10	7	9	Warren	35	90	13.00	4.00	7	10	Cedar
20	90	58.50	19.40	7	9	Washington	25	90	8.00	3.30	5	9	Chase
15	90	96.80	27.70	7	9	Wayne	30	90	13.50	3.70	5	8	Cherry
20	90	23.30	11.30	7	10	Webster	20	90	9.90	3.90	5	8	Cheyenne
20	90	9.50	4.90	7	10	Worth	25	90	12.20	4.10	7	10	Clay
20	90	26.80	12.60	7	10	Wright	25	90	15.60	4.30	7	10	Colfax
							25	90	12.00	4.00	7	10	Cuming
						MONTANA	25	90	10.90	3.50	6	9	Custer
10(5000)	90*	96.70	25.30	4	6	Beaverhead	30	90	10.00	3.80	7	10	Dakota
25(4800)	90	13.70	4.20	4	6	Big Horn	20	90	16.90	4.40	5	7	Dawes
CS	90	10.80	3.00	4	6	Blaine	25	90	9.90	3.60	5	10	Dawson
CS	90	111.30	29.30	4	6	Broadwater	25	90	8.70	3.60	5	8	Deuel
25(4100)	90	26.00	8.90	4	6	Carbon	30	90	11.00	3.80	7	10	Dixon
30(3700)	90	9.40	3.50	4	6	Carter	25	90	13.80	4.30	7	10	Dodge
15(3400)	90*	24.90	7.90	4	6	Cascade	25	90	11.90	4.20	7	10	Douglas
CS	90*	16.60	5.30	4	6	Chouteau	25	90	8.10	3.30	5	9	Dundy
25(3000)	90	10.70	3.60	4	6	Custer	25	90	14.50	4.40	7	10	Fillmore
25(3000)	90	22.20	4.10	4	6	Daniels	25	90	10.20	3.90	7	10	Franklin
25(3000)	90	10.30	3.10	4	6	Dawson	25	90	9.00	3.20	6	9	Frontier
CS	90	42.60	13.30	4	6	Deer Lodge	25	90	10.30	3.80	7	10	Furnas
30(3700)	90	8.20	3.10	4	6	Fallon	25	90	16.80	5.00	7	10	Gage
CS	90	12.90	4.50	4	6	Fergus	20	90	9.30	3.60	5	8	Garden

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
25	90	12.50	3.70	6	10	Garfield	80(600)	90	44.80	11.60	4	6	Belknap
25	90	9.70	3.50	7	10	Gosper	90(700)	90	43.00	11.50	4	6	Carroll
25	90	11.50	3.70	5	8	Grant	CS	90*	28.70	9.30	4	6	Cheshire
25	90	14.00	4.10	7	10	Greeley	CS	90*	35.00	11.10	4	6	Coos
25	90	12.60	4.10	7	10	Hall	CS	90*	36.70	11.30	4	6	Grafton
25	90	13.40	4.20	7	10	Hamilton	60(500)	93	36.80	9.50	4	6	Hillsborough
25	90	10.30	3.90	7	10	Harlan	70(500)	90	42.00	11.00	4	6	Merrimack
25	90	8.20	3.10	6	9	Hayes	50(500)	97	40.50	10.10	4	6	Rockingham
25	90	8.30	3.10	6	9	Hitchcock	60(500)	95	41.00	10.50	4	6	Stafford
35	90	13.90	3.70	6	9	Holt	CS	90*	35.60	10.30	4	6	Sullivan
25	90	11.30	3.50	5	9	Hooker							
25	90	13.70	4.10	7	10	Howard							
25	90	15.50	4.80	7	10	Jefferson	20	110	22.90	6.40	7	9	NEW JERSEY Atlantic
25	90	16.00	5.00	7	10	Johnson	25	100	42.60	9.50	6	8	Bergen
25	90	10.40	3.90	7	10	Kearney	20	100	32.00	8.10	6	9	Burlington
25	90	8.30	3.30	5	9	Keith	20	94	32.00	8.00	6	9	Camden
30	90	14.30	3.70	6	9	Keya Paha	20	112	17.70	5.90	7	9	Cape May
20	90	11.90	4.20	4	7	Kimball	20	100	25.50	6.80	7	9	Cumberland
35	90	14.70	4.00	7	10	Knox	25	100	42.20	9.40	6	8	Essex
25	90	17.60	4.90	7	10	Lancaster	20	94	31.20	7.90	6	9	Gloucester
25	90	8.50	3.20	6	9	Lincoln	25	102	42.30	9.40	6	8	Hudson
25	90	9.50	3.20	6	9	Logan	CS	90	36.10	8.70	6	8	Hunterdon
25	90	12.00	3.60	6	9	Loup	30	95	35.30	8.50	6	8	Mercer
25	90	9.50	3.30	5	9	McPherson	25	99	39.50	9.00	6	8	Middlesex
25	90	12.70	4.10	7	10	Madison	25	109	36.80	8.60	6	8	Monmouth
25	90	14.20	4.20	7	10	Merrick	CS	90	40.10	9.20	6	8	Morris
20	90	11.40	4.00	5	8	Morrill	20	110	28.40	7.60	6	9	Ocean
25	90	14.20	4.10	7	10	Nance	30	92	42.10	9.40	6	8	Passaic
20	90	14.10	5.00	7	10	Nemaha	20	91	28.20	7.40	7	9	Salem
25	90	11.60	4.10	7	10	Nuckolls	30	91	38.80	9.00	6	8	Somerset
25	90	13.10	4.70	7	10	Otoe	CS	90	33.90	8.80	6	8	Sussex
20	90	16.60	5.20	7	10	Pawnee	25	99	41.80	9.30	6	8	Union
25	90	8.10	3.30	7	10	Perkins	CS	90	31.70	8.50	6	8	Warren
25	90	10.00	3.80	7	10	Phelps							
30	90	12.50	4.00	7	10	Pierce							
25	90	15.40	4.20	7	10	Platte	5(5000)	90*	61.90	18.40	4	6	NEW MEXICO Bernalillo
25	90	16.10	4.30	7	10	Polk	5(5000)	90	29.30	8.60	4	6	Catron
25	90	8.80	3.20	6	9	Red Willow	5(3200)	90	11.60	3.90	4	7	Chaves
20	90	14.40	5.20	7	10	Richardson	5(5000)	90	41.20	11.00	4	6	Cibola
30	90	13.70	3.60	6	9	Rock	CS	90	18.80	6.10	4	7	Colfax
25	90	17.00	4.90	7	10	Saline	15	90	11.30	3.60	5	8	Cury
25	90	12.60	4.30	7	10	Sarpy	5(3200)	90	12.00	4.00	4	7	De Baca
25	90	16.40	4.60	7	10	Saunders	0(3500)	90	33.00	9.50	4	6	Dona Ana
20(4500)	90	13.30	4.40	4	7	Scotts Bluff	5(3200)	90	16.70	4.60	4	7	Eddy
25	90	17.90	4.80	7	10	Seward	5(5000)	90	30.00	8.60	4	6	Grant
20	90	16.00	4.10	5	7	Sheridan	15(4800)	90*	16.50	5.30	4	7	Guadalupe
25	90	12.60	4.00	7	10	Sherman	10(5000)	90	16.10	4.80	5	8	Harding
15(5500)	90	18.50	5.20	4	7	Sioux	10(5000)	90	29.60	8.60	4	6	Hidalgo
25	90	12.40	4.00	7	10	Stanton	5(3200)	90	16.30	3.80	5	8	Lea
25	90	13.10	4.40	7	10	Thayer	CS	90*	28.50	8.70	4	6	Lincoln
25	90	11.10	3.40	6	9	Thomas	CS	90*	59.40	18.80	4	6	Los Alamos
25	90	11.30	3.90	7	10	Thurston	0(3500)	90	28.30	8.30	4	6	Luna
25	90	13.30	4.00	7	10	Valley	5(5000)	90	29.70	6.40	4	6	McKinley
25	90	11.60	4.10	7	10	Washington	10(5000)	90	33.40	10.00	4	7	Mora
25	90	11.90	3.90	7	10	Wayne	0(3500)	90*	34.90	9.60	4	6	Otero
25	90	10.60	4.00	7	10	Webster	15(4800)	90	17.30	4.30	5	8	Quay
25	90	13.20	4.00	7	10	Wheeler	CS	90*	37.40	10.20	4	6	Rio Arriba
25	90	15.90	4.40	7	10	York	5(3200)	90	10.50	3.50	5	8	Roosevelt
							CS	90	62.30	19.00	4	6	Sandoval
						NEVADA	5(5000)	90	24.00	6.30	4	6	San Juan
5(4000)	90	100.90	28.90	4	6	Churchill	10(5000)	90*	30.30	9.10	4	7	San Miguel
0(3000)	90	64.20	19.40	4	6	Clark	CS	90*	47.10	14.40	4	6	Santa Fe
CS	90	162.00	66.60	4	6	Demsby	5(5000)	90	30.20	8.90	4	6	Sierra
CS	90	162.00	66.60	4	6	Douglas	15(6000)	90	62.60	18.50	4	6	Socorro
20(5400)	90	56.90	19.80	4	6	Elko	CS	90	41.70	13.10	4	7	Taos
5(4000)	90	88.80	25.80	4	6	Esmeralda	10(5000)	90*	40.70	12.30	4	6	Torrance
CS	90	62.30	19.80	4	6	Eureka	10(5000)	90	14.30	4.20	5	8	Union
5(4000)	90	88.40	24.80	4	6	Humboldt	5(5000)	90	63.70	18.80	4	6	Valencia
5(4000)	90	100.00	29.70	4	6	Lander							
0(2000)	90	50.90	14.40	4	6	Lincoln							
5(4000)	90	129.20	48.50	4	6	Lyon	40	90	27.10	9.00	5	7	NEW YORK Albany
5(4000)	90	155.70	60.90	4	6	Mineral	CS	90	20.20	6.20	4	6	Allegany
5(4000)	90*	87.00	24.30	4	6	Nye	25	102	42.40	9.40	4	6	Bronx
5(4000)	90	66.40	21.30	4	6	Pershing	CS	90	18.40	7.30	4	6	Broome
5(4000)	90	131.20	49.80	4	6	Storey	CS	90	20.60	6.00	4	6	Cattaraugus
15(4400)	90*	136.00	48.70	4	6	Washoe	40(1000)	90	18.90	7.40	4	6	Cayuga
15(6400)	90	43.30	13.90	4	6	White Pine	CS	90	17.80	5.60	4	6	Chautauqua
							CS	90	17.30	6.40	4	6	Chemung
						NEW HAMPSHIRE	CS	90	19.20	7.80	4	6	Chenango

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
50(700)	90	56.60	13.90	4	6	Clinton	10	115	17.70	8.60	9	11	Craven
35	90*	25.80	8.70	5	7	Columbia	10	98	29.50	13.10	8	11	Cumberland
CS	90	18.30	7.30	4	6	Cortland	10	114	12.20	5.90	8	11	Currituck
CS	90	22.20	8.20	5	7	Delaware	10	123	11.00	5.70	9	11	Dare
35	90*	29.00	8.80	5	8	Dutchess	15	90	27.90	12.20	6	9	Davidson
CS	90	31.60	6.90	4	6	Erie	15	90	29.80	12.40	6	9	Davie
CS	90	45.40	12.80	4	6	Essex	10	109	24.40	11.00	9	11	Duplin
CS	90	73.80	16.40	4	6	Franklin	15	90	21.00	9.90	7	10	Durham
50(700)	90	28.70	9.30	4	6	Fulton	15	96	17.20	8.40	8	11	Edgecombe
CS	90	31.70	7.50	4	6	Genesee	15	90	27.60	11.70	6	9	Forsyth
CS	90	25.70	8.60	5	7	Greene	15	92	18.70	9.20	8	11	Franklin
CS	90	36.90	10.50	4	6	Hamilton	10	90	35.90	13.70	6	9	Gaston
CS	90	26.00	8.90	4	6	Herkimer	10	99	14.90	6.80	8	11	Gates
CS	90	26.80	9.10	4	6	Jefferson	10(1800)	90*	54.80	14.40	7	9	Graham
20	108	41.70	9.20	6	8	Kings	15	90	19.00	9.20	7	10	Granville
CS	90	28.70	9.40	4	6	Lewis	10	102	18.70	9.10	9	11	Greene
CS	90	27.50	7.30	4	6	Livingston	15	90	25.00	11.10	7	10	Guilford
CS	90	21.70	8.30	4	6	Madison	15	93	17.30	8.10	8	11	Halifax
40(1000)	90	24.30	7.20	4	6	Monroe	15	95	25.30	11.70	8	11	Harnett
40	90	28.30	9.20	4	6	Montgomery	15(2600)	90*	48.80	14.10	7	9	Haywood
25	112	40.00	9.10	6	8	Nassau	15(2600)	90	42.10	13.80	7	9	Henderson
20	102	42.30	9.40	6	6	New York	10	95	15.50	7.10	8	11	Hertford
CS	90	30.60	7.00	4	6	Niagara	10	96	34.30	13.90	8	11	Hoke
CS	90	25.10	8.80	4	6	Oneida	10	121	13.50	6.80	9	11	Hyde
CS	90	19.40	7.80	4	6	Onondaga	15	90	33.00	12.80	6	9	Iredell
35(1000)	90	22.10	7.10	4	6	Ontario	15(2600)	90*	49.90	14.10	7	9	Jackson
CS	90*	33.70	8.90	5	8	Orange	15	96	22.00	10.30	8	11	Johnston
CS	90	27.50	7.10	4	6	Orleans	10	115	18.90	9.10	9	11	Jones
CS	90	19.40	7.80	4	6	Oswego	15	92	26.10	12.00	7	10	Lee
CS	90	24.10	8.50	4	6	Otsego	10	106	19.10	9.20	9	11	Lenoir
30	92*	35.70	9.10	5	8	Putnam	15	90	35.20	13.40	6	9	Lincoln
20	110	41.30	9.20	6	8	Queens	15(2600)	90	41.00	13.60	6	9	McDowell
40	90*	27.40	9.10	5	7	Rensselaer	15(2600)	90*	47.50	14.00	7	9	Macon
20	102	41.90	9.30	4	8	Richmond	15(2600)	90*	48.00	13.90	6	9	Madison
30	93*	41.10	9.40	6	8	Rockland	10	102	15.90	7.80	9	11	Martin
CS	90	54.70	13.40	4	6	St. Lawrence	10	90	35.10	13.70	6	9	Mecklenburg
50(700)	90	29.70	9.40	4	6	Saratoga	15(2600)	90*	43.50	13.60	6	9	Mitchell
40	90	28.10	9.20	4	6	Schenectady	10	90	29.90	13.20	7	10	Montgomery
CS	90	26.70	8.90	5	7	Schoharie	10	93	28.10	12.80	7	10	Moore
35(1000)	90	17.90	6.60	4	6	Schuyler	15	94	18.10	8.90	8	11	Nash
35(1000)	90	18.70	7.00	4	6	Seneca	10	129	32.00	13.00	9	11	New Hanover
35(1000)	90	18.60	6.40	4	6	Steuben	15	92	16.90	7.80	8	11	Northampton
30	116	24.50	7.40	6	8	Suffolk	10	122	21.70	9.70	9	11	Onslow
CS	90	26.10	8.30	5	8	Sullivan	15	90	21.60	10.00	7	10	Orange
CS	90	17.80	6.90	4	6	Tioga	10	121	16.50	8.00	9	11	Pamlico
CS	90	17.90	6.90	4	6	Tompkins	10	108	12.80	6.20	8	11	Pasquotank
CS	90*	26.70	8.60	5	8	Ulster	10	120	27.70	12.10	9	11	Pender
CS	90	35.50	10.40	4	6	Warren	10	105	13.70	6.40	8	11	Perquimans
40	90	32.90	9.90	4	6	Washington	20	90	20.10	9.40	7	10	Person
40(1000)	90	19.70	7.20	4	6	Wayne	10	103	17.30	8.50	9	11	Pitt
30	96*	41.70	9.40	6	8	Westchester	15(2600)	90	40.40	13.80	7	9	Polk
CS	90	29.80	7.30	4	6	Wyoming	15	90	26.60	12.10	7	10	Randolph
35(1000)	90	19.20	6.90	4	6	Yates	10	94	38.30	14.80	7	10	Richmond
							10	103	40.60	15.80	8	11	Robeson
							20	90	24.60	10.40	7	9	Rockingham
15	90	23.00	10.50	7	10	Alamance	15	90	29.50	12.70	6	9	Rowan
15	90	36.40	12.90	6	9	Alexander	15(2600)	90	39.20	13.60	6	9	Rutherford
20(2500)	90*	39.10	12.50	6	8	Alleghany	10	102	26.60	12.00	8	11	Sampson
10	93	38.40	14.70	7	10	Anson	10	97	40.70	15.90	8	10	Scotland
20(2500)	90*	40.70	12.90	6	8	Ashe	10	90	31.50	13.30	7	10	Stanly
15(2600)	90*	42.40	13.40	6	9	Avery	20	90	27.70	11.20	6	9	Stokes
10	109	16.60	8.10	9	11	Beaufort	20(2500)	90	34.80	12.10	6	9	Surry
10	100	15.40	7.50	8	11	Bertie	10(1800)	90*	53.40	14.30	7	9	Swain
10	108	35.30	13.90	8	11	Bladen	15(2600)	90	43.30	13.90	7	9	Transylvania
10	131	36.10	13.80	9	11	Brunswick	10	115	12.70	6.30	9	11	Tyrrell
15(2600)	90*	44.50	13.90	6	9	Buncombe	10	90	38.40	14.50	7	10	Union
15(2600)	90	39.10	13.40	6	9	Burke	15	90	18.70	9.00	8	10	Vance
10	90	32.30	13.30	6	9	Cabarrus	15	93	21.30	10.10	8	11	Wake
15(2600)	90	39.20	13.20	6	9	Caldwell	15	90	18.40	8.80	8	11	Warren
10	109	12.60	6.10	8	11	Camden	10	107	14.90	7.20	9	11	Washington
10	132	16.40	8.10	9	11	Carteret	20(2500)	90*	41.50	13.20	6	9	Watauga
20	90	21.80	9.60	7	10	Caswell	10	101	20.70	9.70	8	11	Wayne
15	90	35.30	13.10	6	9	Catawba	20(2500)	90	37.70	12.80	6	9	Wilkes
15	90	24.10	11.20	7	10	Chatham	15	97	18.60	9.10	8	11	Wilson
10(1800)	90*	51.10	14.10	7	9	Cherokee	15	90	32.10	12.20	6	9	Yadkin
10	103	14.30	6.80	8	11	Chowan	15(2600)	90*	44.20	13.70	6	9	Yancey
10(1800)	90	46.80	13.90	7	9	Clay							
15	90	37.00	13.60	6	9	Cleveland							
10	114	42.50	16.60	9	11	Columbus	CS	90	7.30	2.70	4	7	NORTH DAKOTA Adams

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
40	90	6.20	1.90	5	7	Barnes	20	90	16.40	5.70	5	7	Fulton
40	90	5.10	1.70	4	6	Benson	20	90	18.90	8.10	5	7	Gallia
30(2600)	90	7.80	2.70	4	6	Billings	25	90	22.20	5.80	4	6	Geauga
50	90	5.40	1.70	4	6	Bottineau	20	90	20.20	8.00	5	7	Greene
35	90	7.60	2.80	4	6	Bowman	25	90	13.20	6.10	5	7	Guernsey
35	90	8.90	2.40	4	6	Burke	20	90	18.60	8.70	5	7	Hamilton
35	90	6.60	2.30	4	7	Burleigh	20	90	20.60	6.30	5	7	Hancock
50	90	7.30	1.90	5	7	Cass	20	90	24.20	6.90	5	7	Hardin
60	90	4.60	1.40	4	6	Cavalier	20	90	12.60	5.80	5	7	Harrison
40	90	7.80	2.30	5	7	Dickey	20	90	17.30	5.90	5	7	Henry
35	90	16.70	3.30	4	6	Divide	20	90	18.90	8.20	5	7	Highland
CS	90	7.50	2.60	4	6	Dunn	25	90	16.40	6.90	5	7	Hocking
40	90	5.30	1.80	4	7	Eddy	20	90	14.60	5.90	5	7	Holmes
50	90	7.30	2.40	5	7	Emmons	20	90	16.90	5.70	5	7	Huron
40	90	5.40	1.80	4	7	Foster	20	90	18.60	7.90	5	7	Jackson
30(2600)	90	8.30	2.80	4	6	Golden Valley	25	90	12.60	5.80	5	7	Jefferson
60	90	5.40	1.60	4	7	Grand Forks	20	90	15.20	6.10	5	7	Knox
40	90	6.90	2.50	4	7	Grant	CS	90	21.90	5.70	4	6	Lake
40	90	5.50	1.80	4	7	Griggs	20	90	22.00	8.70	5	7	Lawrence
CS	90	6.90	2.60	4	7	Hettinger	20	90	14.80	6.20	5	7	Licking
35	90	6.20	2.10	5	7	Kidder	20	90	26.90	7.70	5	7	Logan
40	90	7.20	2.20	5	7	La Moure	20	90	18.00	5.70	5	6	Lorain
40	90	6.80	2.20	5	7	Logan	20	90	17.20	5.60	5	7	Lucas
40	90	5.40	1.80	4	6	McHenry	20	90	18.60	7.30	5	7	Madison
50	90	7.60	2.40	5	7	McIntosh	20	90	15.70	5.60	4	6	Mahoning
30(2600)	90	10.40	2.80	4	6	McKenzie	20	90	18.30	6.30	5	7	Marion
35	90	6.10	2.10	4	7	McLean	20	90	18.30	5.80	5	6	Medina
CS	90	6.30	2.20	4	7	Mercer	25	90	18.00	7.60	5	7	Meigs
35	90	6.60	2.30	4	7	Morton	20	90	28.20	8.00	5	7	Mercer
35	90	8.80	2.50	4	6	Mountrail	20	90	26.90	8.20	5	7	Miami
50	90	5.10	1.60	4	7	Nelson	20	90	13.50	6.20	5	7	Monroe
35	90	6.30	2.30	4	7	Oliver	20	90	22.10	8.10	5	7	Montgomery
60	90	4.60	1.30	4	6	Pembina	25	90	15.20	6.40	5	7	Morgan
40	90	5.20	1.70	4	6	Pierce	20	90	16.70	6.10	5	7	Morrow
50	90	5.10	1.70	4	6	Ramsey	25	90	14.30	6.20	5	7	Muskingum
40	90	7.50	2.10	5	8	Ransom	20	90	14.10	6.30	5	7	Noble
40	90	7.00	2.00	4	6	Renville	20	90	16.90	5.60	5	7	Ottawa
50	90	9.00	2.30	5	8	Richland	20	90	18.40	6.30	5	7	Paulding
50	90	4.90	1.60	4	6	Rolette	25	90	15.50	6.50	5	7	Perry
40	90	8.20	2.30	5	8	Sargent	20	90	16.80	7.10	5	7	Pickaway
35	90	5.60	1.90	4	7	Sheridan	20	90	18.60	8.00	5	7	Pike
50	90	7.70	2.50	5	7	Sioux	20	90	18.80	5.80	4	6	Portage
35	90	7.40	2.80	4	6	Slope	20	90	19.80	8.30	5	7	Preble
30(2600)	90	7.20	2.60	4	7	Stark	20	90	22.10	6.50	5	7	Putnam
50	90	5.50	1.70	4	7	Steele	20	90	16.20	5.90	5	7	Richland
40	90	6.00	1.90	5	7	Stutsman	20	90	17.80	7.60	5	7	Ross
60	90	4.90	1.60	4	6	Towner	20	90	17.80	5.80	5	7	Sandusky
50	90	5.90	1.70	4	7	Trail	20	90	22.20	8.60	6	7	Scioto
60	90	4.90	1.40	4	6	Walsh	20	90	18.40	6.00	5	7	Seneca
35	90	6.50	2.00	4	6	Ward	20	90	30.70	8.30	5	7	Shelby
40	90	5.40	1.80	4	7	Wells	20	90	15.90	5.80	5	6	Stark
30(2600)	90	13.90	3.20	4	6	Williams	20	90	18.50	5.80	5	6	Summit
							25	90	17.60	5.60	4	6	Trumbull
						OHIO	25	90	13.60	5.80	5	7	Tuscarawas
20	90	23.70	8.80	5	7	Adams	20	90	19.70	6.90	5	7	Union
20	90	27.40	7.50	5	7	Allen	20	90	23.50	7.10	5	7	Van Wert
20	90	16.30	5.90	5	7	Ashland	25	90	17.70	7.50	5	7	Vinton
CS	90	19.20	5.60	4	6	Ashtabula	20	90	18.90	8.30	5	7	Warren
25	90	17.00	7.10	5	7	Athens	20	90	15.50	6.60	5	7	Washington
20	90	31.10	8.00	5	7	Auglaize	20	90	16.10	5.80	5	7	Wayne
20	90	12.70	5.90	5	7	Belmont	20	90	15.70	5.80	5	7	Williams
20	90	22.60	8.90	5	7	Brown	20	90	18.30	5.90	5	7	Wood
20	90	18.30	8.50	5	7	Butler	20	90	19.10	6.30	5	7	Wyandot
25	90	13.40	5.70	5	7	Carroll							
20	90	24.70	7.70	5	7	Champaign							
20	90	22.80	7.80	5	7	Clark	10	90	18.70	9.10	8	11	OKLAHOMA Adair
20	90	19.30	8.70	5	7	Clermont	15	90	15.80	5.80	8	11	Alfalfa
20	90	18.80	8.00	5	7	Clinton	10	90	20.60	7.90	8	11	Atoka
25	90	13.90	5.60	5	6	Columbiana	20	90	11.80	4.60	7	10	Beaver
25	90	13.60	6.00	5	7	Coshocton	15	90	20.50	6.20	7	11	Beckham
20	90	17.70	6.10	5	7	Crawford	10	90	27.50	7.50	8	11	Blaine
20	90	20.70	5.80	4	6	Cuyahoga	5	90	19.50	7.60	8	11	Bryan
20	90	25.50	8.30	5	7	Darke	10	90	38.50	9.20	8	11	Caddo
20	90	17.70	6.10	5	7	Defiance	10	90	37.10	8.70	8	11	Canadian
20	90	17.50	6.40	5	7	Delaware	10	90	23.80	7.70	8	11	Carter
20	90	16.70	5.60	5	7	Erie	10	90	18.10	8.60	8	11	Cherokee
25	90	16.00	6.70	5	7	Fairfield	5	90	18.20	8.00	8	11	Choctaw
20	90	18.00	7.60	5	7	Fayette	10(5000)	90	12.60	4.10	6	8	Cimarron
20	90	16.60	6.60	5	7	Franklin	10	90	35.50	8.80	8	11	Cleveland

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
10	90	21.70	8.00	8	11	Coal	CS	85	63.60	31.10	4	6	Jackson
10	90	33.80	9.00	8	11	Comanche	CS	85*	39.30	14.80	4	6	Jefferson
10	90	26.20	7.90	8	11	Cotton	CS	85	105.10	45.80	4	6	Josephine
15	90	13.90	7.60	8	11	Craig	CS	85*	150.00	60.00	4	6	Klamath
10	90	16.70	7.30	8	11	Creek	10(3200)	85	63.70	25.70	4	6	Lake
10	90	23.90	6.80	7	11	Custer	10(600)	85*	81.40	39.40	4	6	Lane
15	90	15.80	8.40	8	11	Delaware	5(100)	85*	150.00	60.00	4	6	Lincoln
15	90	18.70	6.20	7	11	Dewey	10(600)	85	94.80	41.40	4	6	Linn
15	90	15.40	5.50	7	11	Ellis	10(3200)	85	31.30	9.50	4	6	Malheur
15	90	19.70	6.40	8	11	Garfield	10(600)	85	98.80	40.20	4	6	Marion
10	90	30.50	8.50	8	11	Garvin	15(1500)	85	34.30	11.60	4	6	Morrow
10	90	39.20	9.20	8	11	Grady	10(600)	85	104.50	34.30	4	6	Multnomah
15	90	15.60	6.00	8	11	Grant	CS	85*	112.10	48.00	4	6	Polk
10	90	19.80	6.20	7	11	Greer	20(2800)	85	42.20	14.50	4	6	Sherman
10	90	16.90	5.70	7	11	Harmon	CS	85*	150.00	60.00	4	6	Tillamook
20	90	12.10	5.00	7	10	Harper	20(1900)	85	41.10	13.10	4	6	Umatilla
10	90	19.60	8.70	8	11	Haskell	CS	85	35.90	11.20	4	6	Union
10	90	23.10	8.10	8	11	Hughes	CS	85	43.90	13.00	4	6	Wallowa
10	90	18.80	6.20	7	11	Jackson	CS	85*	46.20	17.30	4	6	Wasco
5	90	23.00	7.30	8	11	Jefferson	10(600)	85*	109.30	41.60	4	6	Washington
10	90	22.90	7.80	8	11	Johnston	CS	85	36.00	12.60	4	6	Wheeler
15	90	13.60	6.00	8	11	Kay	CS	85*	109.70	45.30	4	6	Yamhill
10	90	31.10	8.00	8	11	Kingfisher							
10	90	25.70	7.40	7	11	Kiowa							
10	90	19.60	8.60	8	11	Latimer	30(1700)	90	18.90	6.30	6	9	PENNSYLVANIA Adams
10	90	19.50	9.20	8	11	Le Flore	25	90	12.80	5.70	5	7	Allegheny
10	90	22.90	7.70	8	11	Lincoln	CS	90	12.80	5.60	4	6	Armstrong
10	90	27.10	7.90	8	11	Logan	25	90	12.70	5.60	5	6	Beaver
5	90	20.40	7.30	8	11	Love	CS	90	17.50	6.20	5	7	Bedford
10	90	34.50	8.80	8	11	McClain	CS	90	29.50	7.90	6	8	Berks
10	90	17.70	8.50	8	11	McCurtain	30(1700)	90	16.70	6.00	5	7	Blair
10	90	19.00	8.30	8	11	McIntosh	30(1700)	90	18.00	6.70	4	6	Bradford
15	90	19.90	6.30	8	11	Major	30	90	33.60	8.40	6	8	Bucks
5	90	22.00	7.60	8	11	Marshall	25	90	12.70	5.50	4	6	Butler
10	90	15.70	7.80	8	11	Mayes	CS	90	15.40	5.90	5	7	Cambria
10	90	26.40	8.20	8	11	Murray	30(1700)	90	15.40	5.70	4	6	Cameron
10	90	18.20	8.30	8	11	Muskogee	CS	90	26.60	7.80	6	8	Carbon
10	90	18.60	6.70	8	11	Noble	30(1700)	90	16.60	5.90	5	7	Centre
15	90	12.80	6.90	8	11	Nowata	25	90	33.10	8.10	6	9	Chester
10	90	19.90	7.80	8	11	Okfuskee	30(1700)	90	13.00	5.50	4	6	Clarion
10	90	35.20	8.70	8	11	Oklahoma	30(1700)	90	15.00	5.60	5	7	Clearfield
10	90	18.10	7.80	8	11	Okmulgee	30(1700)	90	16.60	6.00	5	7	Clinton
10	90	13.00	6.30	8	11	Osage	CS	90	20.70	6.80	5	7	Columbia
15	90	13.30	7.80	8	11	Ottawa	30(1700)	90	15.70	5.40	4	6	Crawford
10	90	16.10	6.50	8	11	Pawnee	25(1200)	90	18.90	6.30	5	8	Cumberland
10	90	18.90	7.00	8	11	Payne	30(1700)	90	21.30	6.50	6	8	Dauphin
10	90	20.00	8.20	8	11	Pittsburg	25	90	32.80	8.10	6	9	Delaware
10	90	25.60	8.20	8	11	Pontotoc	30(1700)	90	14.40	5.50	4	6	Elk
10	90	26.80	8.20	8	11	Pottawatomie	CS	90	16.40	5.30	4	6	Erie
10	90	18.70	8.00	8	11	Pushmataha	CS	90	14.70	6.10	5	7	Fayette
15	90	18.40	6.00	7	11	Roger Mills	30(1700)	90	13.60	5.50	4	6	Forest
10	90	15.40	7.40	8	11	Rogers	30(1700)	90	18.60	6.20	5	8	Franklin
10	90	23.70	8.10	8	11	Seminole	CS	90	18.70	6.20	5	7	Fulton
10	90	19.60	9.00	8	11	Sequoyah	20	90	14.00	6.10	5	7	Greene
10	90	32.00	8.60	8	11	Stephens	30(1700)	90	17.40	6.00	5	7	Huntingdon
15	90	11.90	4.20	6	9	Texas	CS	90	13.70	5.80	5	7	Indiana
10	90	18.50	6.30	8	11	Tillman	CS	90	13.40	5.60	4	6	Jefferson
10	90	16.00	7.20	8	11	Tulsa	25(1200)	90	17.90	6.10	5	7	Juniata
10	90	17.40	8.10	8	11	Wagoner	CS	90	23.40	7.60	5	7	Lackawanna
15	90	12.60	6.40	8	11	Washington	30(1700)	90	27.80	7.50	6	9	Lancaster
10	90	26.10	7.40	7	11	Washita	25	90	13.60	5.50	4	6	Lawrence
15	90	14.40	5.60	7	11	Woods	30(1700)	90	26.20	7.30	6	8	Lebanon
15	90	14.30	5.50	7	11	Woodward	CS	90	29.20	8.20	6	8	Lehigh
							CS	90	23.40	7.50	5	7	Luzerne
						OREGON	35(800)	90	17.40	6.20	5	7	Lycoming
CS	85	37.20	10.90	4	6	Baker	CS	90	16.60	5.70	4	6	McKean
CS	85*	104.80	45.60	4	6	Benton	30	90	14.30	5.40	4	6	Mercer
CS	85*	102.40	32.90	4	6	Clackamas	25(1200)	90	17.70	6.10	5	7	Mifflin
CS	85*	150.00	60.00	4	6	Clatsop	CS	90	28.50	8.30	6	8	Monroe
10(600)	85*	101.00	35.50	4	6	Columbia	30	90	33.10	8.20	6	8	Montgomery
CS	85*	150.00	60.00	4	6	Coos	CS	90	19.50	6.50	5	7	Montour
10(3200)	85*	35.90	13.80	4	6	Crook	CS	90	31.00	8.40	6	8	Northampton
5(300)	85*	150.00	60.00	4	6	Curry	CS	90	18.90	6.40	5	7	Northumberland
CS	85*	40.30	16.90	4	6	Deschutes	25(1200)	90	18.60	6.20	5	8	Perry
10(600)	85*	107.20	47.70	4	6	Douglas	25	90	32.40	8.10	6	9	Philadelphia
20(2800)	85	37.70	12.90	4	6	Gilliam	CS	90	28.40	8.50	5	8	Pike
10(3200)	85	35.30	10.60	4	6	Grant	CS	90	16.50	5.90	4	6	Potter
10(3200)	85	28.80	9.90	4	6	Harney	CS	90	25.50	7.40	6	8	Schuylkill
CS	85*	52.10	19.50	4	6	Hood River	35(800)	90	18.30	6.20	5	7	Snyder

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
CS	90	15.50	6.10	5	7	Somerset	40	90	17.60	3.80	6	9	Charles Mix
30(1700)	90	18.60	6.60	5	7	Sullivan	50	90	11.80	2.80	6	9	Clark
CS	90	19.10	7.30	5	7	Susquehanna	35	90	12.00	3.90	7	10	Clay
30(1700)	90	16.60	6.20	4	6	Tioga	50	90	10.60	2.70	6	9	Codrington
35(800)	90	18.40	6.30	5	7	Union	50	90	7.60	2.60	5	7	Corson
30(1700)	90	13.50	5.40	4	6	Venango	20	90	17.90	4.70	4	7	Custer
CS	90	15.70	5.50	4	6	Warren	40	90	17.40	3.70	6	9	Davison
25	90	13.00	5.90	5	7	Washington	50	90	10.10	2.60	5	8	Day
CS	90	23.90	7.90	5	7	Wayne	50	90	10.10	2.60	6	9	Deuel
CS	90	13.70	5.90	5	7	Westmoreland	50	90	8.30	2.70	5	7	Dewey
30(1700)	90	20.90	7.30	5	7	Wyoming	40	90	17.70	3.80	6	9	Douglas
30(1700)	90	23.40	6.80	6	9	York	50	90	9.30	2.60	5	8	Edmunds
							15(5500)	90	18.50	4.80	4	7	Fall River
						RHODE ISLAND	50	90	11.60	2.80	5	8	Faulk
30	111	26.50	7.80	5	8	Bristol	50	90	10.60	2.60	6	8	Grant
30	110	26.30	7.80	5	8	Kent	40	90	17.30	3.80	6	9	Gregory
30	116	25.20	7.40	6	8	Newport	30	90	11.90	3.60	5	8	Haakon
35	105	26.80	8.10	5	7	Providence	50	90	11.10	2.80	6	9	Hamlin
30	119	25.20	7.50	6	8	Washington	40	90	16.20	3.50	5	8	Hand
							40	90	15.70	3.50	6	9	Hanson
						SOUTH CAROLINA	35	90	8.50	3.30	4	6	Harding
10	90	42.20	14.20	7	9	Abbeville	35	90	13.10	3.40	5	8	Hughes
10	94	49.40	16.90	8	10	Aiken	40	90	15.50	3.80	6	9	Hutchinson
5	101	57.80	19.20	8	11	Allendale	40	90	14.90	3.40	5	8	Hyde
10	90	40.50	13.80	7	9	Anderson	25	90	12.50	3.60	5	8	Jackson
5	101	77.10	22.20	8	11	Bamberg	40	90	19.70	3.90	6	9	Jerauld
5	98	57.80	19.00	8	11	Barnwell	30	90	12.70	3.60	5	8	Jones
5	122	71.30	21.70	9	11	Beaufort	50	90	12.70	3.10	6	9	Kingsbury
5	121	163.50	46.00	9	11	Berkeley	40	90	12.00	3.20	6	9	Lake
10	98	84.40	23.60	8	10	Calhoun	25(4800)	90	15.20	4.20	4	6	Lawrence
5	129	137.90	39.60	9	11	Charleston	40	90	10.80	3.60	6	9	Lincoln
10	90	38.60	13.90	6	9	Cherokee	35	90	15.90	3.70	5	9	Lyman
10	90	42.60	15.50	7	9	Chester	40	90	13.00	3.50	6	9	McCook
10	95	43.80	16.80	7	10	Chesterfield	50	90	8.30	2.50	5	7	McPherson
10	104	116.90	32.70	8	11	Clarendon	50	90	8.60	2.50	5	8	Marshall
5	110	112.80	30.40	9	11	Colleton	30	90	14.20	4.10	4	7	Meade
10	98	66.60	22.50	8	10	Darlington	30	90	12.80	3.60	5	8	Mellette
10	102	56.00	19.90	8	11	Dillon	40	90	13.70	3.30	6	9	Miner
5	110	121.10	33.10	9	11	Dorchester	40	90	11.30	3.60	6	9	Minnehaha
10	92	46.40	15.90	7	10	Edgefield	40	90	10.80	3.20	6	9	Moody
10	92	52.00	17.60	7	10	Fairfield	20	90	15.20	4.10	4	7	Pennington
10	105	85.40	26.40	8	11	Florence	CS	90	8.00	2.90	4	7	Perkins
5	126	126.30	38.90	9	11	Georgetown	50	90	11.40	2.90	5	8	Potter
10	90	40.90	13.90	7	9	Greenville	50	90	10.00	2.50	5	8	Roberts
10	90	43.20	14.60	7	10	Greenwood	40	90	18.80	3.80	6	9	Sanborn
5	105	62.70	20.40	9	11	Hampton	20	90	16.90	4.30	5	7	Shannon
10	119	92.70	28.20	9	11	Horry	50	90	12.80	3.10	5	8	Spink
0	111	58.10	19.30	9	11	Jasper	35	90	13.10	3.40	5	8	Stanley
10	95	58.70	19.60	7	10	Kershaw	40	90	12.40	3.20	5	8	Sully
10	92	42.60	16.10	7	10	Lancaster	25	90	14.20	3.80	5	8	Todd
10	90	42.30	14.40	7	9	Laurens	35	90	15.30	3.70	5	9	Tripp
10	97	66.20	21.70	8	10	Lee	40	90	12.50	3.70	6	9	Turner
10	94	58.00	18.80	8	10	Lexington	35	90	11.00	3.80	7	10	Union
10	90	42.40	14.30	7	10	McCormick	50	90	9.00	2.70	5	7	Walworth
10	108	82.10	26.10	8	11	Marion	35	90	14.50	4.00	6	10	Yankton
10	97	48.50	18.10	8	10	Marlboro	40	90	8.50	2.90	5	7	Ziebach
10	90	49.30	16.50	7	10	Newberry							
10(1800)	90	40.80	13.60	7	9	Oconee							TENNESSEE
10	100	88.70	24.50	8	11	Orangeburg	10(1800)	90	52.00	14.10	6	9	Anderson
10(1800)	90	41.80	13.80	7	9	Pickens	10	90	28.00	13.30	6	9	Bedford
10	95	60.30	19.50	8	10	Richland	10	90	67.60	22.80	6	8	Benton
10	91	49.40	16.40	7	10	Saluda	10(1800)	90	39.70	13.50	6	9	Bledsoe
10	90	39.70	14.00	7	9	Spartanburg	10(1800)	90*	59.20	15.10	6	9	Blount
10	97	92.20	26.50	8	10	Sumter	10(1800)	90	56.30	14.50	7	9	Bradley
10	90	41.90	14.70	7	9	Union	10(1800)	90	43.20	13.50	6	8	Campbell
10	111	140.00	42.50	9	11	Williamsburg	10(1800)	90	27.20	13.10	6	8	Cannon
10	90	38.80	14.20	6	9	York	10	90	92.20	26.90	7	9	Carroll
							15(2600)	90*	43.80	13.40	6	8	Carter
						SOUTH DAKOTA	10	90	38.20	16.50	6	8	Cheatham
40	90	19.30	3.90	6	9	Aurora	10	90	67.40	23.30	7	9	Chester
40	90	17.40	3.60	6	9	Beadle	10(1800)	90	50.80	13.80	6	8	Claiborne
25	90	16.40	4.00	5	8	Bennett	10(1800)	90	25.00	12.60	6	8	Clay
40	90	16.20	4.00	6	10	Bon Homme	10(1800)	90*	55.10	14.30	6	9	Cocke
50	90	10.90	2.80	6	9	Brookings	10(1800)	90	28.50	13.10	6	9	Coffee
50	90	9.40	2.60	5	8	Brown	10	90	136.20	41.30	7	9	Crockett
40	90	18.50	3.90	6	9	Brule	10(1800)	90	35.20	13.10	6	8	Cumberland
40	90	19.30	3.90	5	9	Buffalo	10	90	32.20	14.50	6	8	Davidson
30(3700)	90	13.10	4.10	4	6	Butte	10	90	55.10	20.40	7	9	Decatur
50	90	8.30	2.60	5	7	Campbell	10(1800)	90	26.90	12.90	6	8	De Kalb

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
10	90	42.00	17.80	6	8	Dickson	0	131	9.90	2.60	10	12	Aransas
10	90	262.60	82.90	7	9	Dyer	5	90	12.60	5.60	8	11	Archer
10	90	96.10	28.10	7	9	Fayette	15	90	16.70	5.00	6	9	Armstrong
10(1800)	90	27.80	12.50	6	8	Fentress	5	93	15.60	3.20	9	12	Atascosa
10(1800)	90	31.80	13.10	6	9	Franklin	5	97	10.30	4.20	10	12	Austin
10	90	138.10	41.60	7	9	Gibson	15	90	10.70	3.60	6	8	Bailey
10	90	29.20	13.90	6	9	Giles	5	90	8.60	2.70	8	11	Bandera
10(1800)	90	55.00	14.10	6	8	Grainger	5	92	9.90	4.00	9	12	Bastrop
10(1800)	90*	49.60	13.90	6	9	Greene	5	90	11.40	5.10	8	11	Baylor
10(1800)	90	34.20	13.20	6	9	Grundy	0	106	13.10	3.00	9	12	Bee
10(1800)	90	55.00	14.20	6	8	Hamblen	5	90	8.60	4.20	9	11	Bell
10(1800)	90	51.20	14.10	7	9	Hamilton	5	90	12.40	3.40	9	12	Bexar
10(1800)	90	47.60	13.50	6	8	Hancock	5	90	8.40	3.70	9	11	Blanco
10	90	72.80	24.20	7	9	Hardeman	5	90	10.10	3.30	6	10	Borden
10	90	47.50	19.30	7	9	Hardin	5	90	8.40	4.50	9	11	Bosque
10(1800)	90	48.60	13.70	6	8	Hawkins	5	90	17.30	8.50	8	11	Bowie
10	90	123.60	37.00	7	9	Haywood	0	120	9.60	4.00	10	13	Brazoria
10	90	66.30	23.00	7	9	Henderson	5	90	10.70	4.60	10	12	Brazos
10	90	97.30	27.40	6	8	Henry	0(4500)	90	37.90	9.80	6	9	Brewster
10	90	40.20	17.30	6	8	Hickman	15	90	12.30	4.30	6	10	Briscoe
10	90	58.40	20.60	6	8	Houston	0	106	8.90	2.20	9	12	Brooks
10	90	56.00	20.30	6	8	Humphreys	5	90	7.30	3.90	8	11	Brown
10(1800)	90	25.60	12.80	6	8	Jackson	5	90	10.40	4.30	9	12	Burleson
10(1800)	90	57.60	14.50	6	9	Jefferson	5	90	7.90	3.80	9	11	Burnet
20(2500)	90*	42.10	13.00	6	8	Johnson	5	92	10.30	3.90	9	12	Caldwell
10(1800)	90	58.10	14.70	6	9	Knox	0	121	10.10	3.60	10	12	Calhoun
10	90	335.90	107.70	7	9	Lake	5	90	7.90	4.00	8	11	Callahan
10	90	204.60	64.30	7	9	Lauderdale	0	129	5.10	1.40	10	12	Cameron
10	90	32.50	14.60	6	9	Lawrence	5	90	16.00	7.50	8	11	Camp
10	90	39.10	17.00	6	9	Lewis	20	90	17.70	5.10	6	9	Carson
10	90	28.50	13.30	6	9	Lincoln	5	90	17.00	8.20	8	11	Cass
10(1800)	90	55.60	14.50	6	9	Loudon	20	90	12.00	3.80	6	8	Castro
10(1800)	90	56.00	14.50	7	9	McMinn	0	119	10.90	4.60	11	13	Chambers
10	90	54.90	20.50	7	9	McNairy	5	90	13.60	6.10	9	11	Cherokee
10	90	26.20	13.20	6	8	Macon	10	90	14.00	5.20	7	11	Childress
10	90	95.60	28.10	7	9	Madison	5	90	16.50	6.20	8	11	Clay
10(1800)	90	41.80	13.70	6	9	Marion	5(3200)	90	10.20	3.40	6	8	Cochran
10	90	28.60	13.70	6	9	Marshall	5	90	8.30	3.40	7	11	Coke
10	90	32.10	14.40	6	9	Maury	5	90	7.30	3.80	8	11	Coleman
10(1800)	90	51.10	14.20	7	9	Meigs	5	90	14.30	6.20	9	11	Collin
10(1800)	90	57.50	14.80	7	9	Monroe	15	90	17.20	5.60	7	10	Collingsworth
10	90	50.10	19.30	6	8	Montgomery	5	98	10.40	4.10	10	12	Colorado
10	90	28.50	13.20	6	9	Moore	5	90	11.20	3.80	9	12	Comal
10(1800)	90	40.10	13.40	6	8	Morgan	5	90	7.70	4.10	8	11	Comanche
10	90	179.60	53.40	7	9	Obion	5	90	7.30	3.50	8	11	Concho
10(1800)	90	26.10	12.50	6	8	Overton	5	90	17.50	6.50	8	11	Cooke
10	90	46.60	19.00	6	9	Perry	5	90	8.20	4.20	9	11	Coryell
10(1800)	90	25.70	12.30	6	8	Pickett	10	90	11.50	4.70	7	11	Cottle
10(1800)	90	57.20	14.60	7	9	Polk	5	90	16.70	3.90	6	9	Crane
10(1800)	90	26.80	12.70	6	8	Putnam	0	90	8.00	2.70	7	10	Crockett
10(1800)	90	45.80	13.90	6	9	Rhea	10	90	9.40	3.80	6	10	Crosby
10(1800)	90	47.80	14.00	6	9	Roane	0(3500)	90	39.70	12.00	5	7	Culberson
10	90	37.10	16.20	6	8	Robertson	10(5000)	90	15.90	4.20	6	8	Dallam
10	90	27.60	13.40	6	8	Rutherford	5	90	12.00	5.80	9	11	Dallas
10(1800)	90	36.00	12.90	6	8	Scott	5	90	12.00	3.50	6	9	Dawson
10(1800)	90	41.10	13.60	6	9	Sequatchie	15	90	14.10	4.00	6	8	Deaf Smith
10(1800)	90*	58.70	14.90	6	9	Sevier	5	90	16.10	7.10	9	11	Delta
10	90	137.50	41.50	7	10	Shelby	5	90	13.70	6.00	8	11	Denton
10(1800)	90	26.20	13.10	6	8	Smith	5	100	12.20	3.90	9	12	De Witt
10	90	70.10	23.10	6	8	Stewart	10	90	9.50	4.10	7	10	Dickens
15(2600)	90	42.80	13.20	6	8	Sullivan	0	90	8.20	2.30	9	11	Dimmit
10	90	28.50	14.00	6	8	Sumner	15	90	16.50	5.20	7	10	Donley
10	90	176.80	53.00	7	9	Tipton	0	99	10.60	2.50	9	12	Duval
10	90	26.90	13.40	6	8	Trousdale	5	90	8.10	4.20	8	11	Eastland
15(2600)	90	45.90	13.60	6	9	Unicoi	5	90	19.80	4.00	6	9	Ector
10(1800)	90*	54.60	14.20	6	8	Union	5	90	6.60	2.40	8	11	Edwards
10(1800)	90	31.60	13.10	6	9	Van Buren	5	90	11.00	5.50	9	11	Ellis
10(1800)	90	28.70	13.00	6	9	Warren	0(3500)	90	36.20	10.80	4	6	El Paso
15(2600)	90*	45.40	13.50	6	9	Washington	5	90	8.20	4.40	8	11	Erath
10	90	39.50	17.20	7	9	Wayne	5	90	10.30	4.80	9	12	Falls
10	90	118.80	32.90	6	9	Weakley	5	90	17.00	7.00	8	11	Fannin
10(1800)	90	28.50	12.90	6	9	White	5	95	10.40	4.10	9	12	Fayette
10	90	31.70	14.30	6	8	Williamson	5	90	8.30	3.90	7	11	Fisher
10	90	27.30	13.60	6	8	Wilson	15	90	10.40	3.90	6	10	Floyd
							10	90	12.20	5.10	7	11	Foard
						TEXAS	0	108	10.20	4.10	10	13	Fort Bend
5	90	12.50	5.90	9	11	Anderson	5	90	15.90	7.40	8	11	Franklin
5	90	21.80	4.10	6	8	Andrews	5	90	11.80	5.50	9	11	Freestone
5	91	13.80	6.00	10	12	Angelina	5	90	11.30	2.70	9	11	Frio

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
5(3200)		17.40	3.90	6	8	Gaines	0	90	6.50	2.00	8	11	Maverick
0	123	9.90	4.10	10	13	Galveston	5	90	9.90	2.70	9	11	Medina
5	90	9.20	3.40	6	10	Garza	5	90	6.80	3.00	8	11	Menard
5	90	8.00	3.50	8	11	Gillespie	5	90	16.60	3.70	6	9	Midland
5	90	11.20	3.20	6	10	Glasscock	5	90	10.10	4.40	9	12	Milam
0	106	12.50	3.70	9	12	Goliad	5	90	7.40	3.90	8	11	Mills
5	95	11.60	3.90	9	12	Gonzales	5	90	9.20	3.40	7	11	Mitchell
15	90	18.50	5.40	7	10	Gray	5	90	16.40	6.20	8	11	Montague
5	90	17.60	6.90	8	11	Grayson	5	97	11.00	4.80	10	12	Montgomery
5	90	16.10	7.20	9	11	Gregg	15	90	15.60	4.30	6	9	Moore
5	92	10.70	4.70	10	12	Grimes	5	90	16.50	7.80	8	11	Morris
5	93	12.00	3.90	9	12	Guadalupe	10	90	10.90	4.30	7	10	Motley
15	90	10.80	3.70	6	9	Hale	5	90	14.70	6.30	9	11	Nacogdoches
15	90	15.60	5.20	7	10	Hall	5	90	11.60	5.60	9	11	Navarro
5	90	7.90	4.20	8	11	Hamilton	5	97	14.90	6.10	10	12	Newton
15	90	14.20	4.80	6	9	Hansford	5	90	8.30	3.80	7	11	Nolan
10	90	14.20	5.40	7	11	Hardeman	0	116	10.00	2.50	10	12	Nueces
5	105	12.30	5.40	10	13	Hardin	15	90	13.20	4.90	7	10	Ochiltree
0	105	10.50	4.30	10	13	Harris	10(5000)	90	17.70	4.30	6	8	Oldham
5	90	16.60	7.60	9	11	Harrison	0	112	12.40	5.40	11	13	Orange
10(5000)	90	17.10	4.30	6	8	Hartley	5	90	9.60	4.90	8	11	Palo Pinto
5	90	8.90	4.20	7	11	Haskell	5	90	16.20	7.20	9	11	Panola
5	90	10.30	3.80	9	12	Hays	5	90	10.40	5.20	8	11	Parker
20	90	16.40	5.40	7	10	Hemphill	15	90	11.30	3.60	6	8	Parmer
5	90	12.50	6.00	9	11	Henderson	5	90	17.70	5.10	6	9	Pecos
0	105	6.70	1.70	10	12	Hidalgo	5	95	12.00	5.40	10	12	Polk
5	90	9.70	5.00	9	11	Hill	15	90	16.50	4.30	6	9	Potter
15	90	10.10	3.40	6	8	Hockley	0(4500)	90	38.00	10.20	5	8	Presidio
5	90	9.30	4.90	8	11	Hood	5	90	13.90	6.40	9	11	Rains
5	90	15.20	6.90	9	11	Hopkins	20	90	15.10	4.20	6	9	Randall
5	90	12.10	5.60	9	12	Houston	5	90	9.80	2.90	7	10	Reagan
5	90	11.20	3.30	6	10	Howard	5	90	7.40	2.40	8	11	Real
0(3500)	90	41.10	13.10	4	6	Hudspeth	5	90	17.10	8.00	8	11	Red River
5	90	14.50	6.40	9	11	Hunt	5	90	18.50	5.20	5	8	Reeves
15	90	16.40	4.90	6	9	Hutchinson	0	117	11.30	2.80	10	12	Refugio
5	90	7.90	2.70	7	11	Irion	20	90	17.80	5.50	7	10	Roberts
5	90	11.80	5.50	8	11	Jack	5	90	10.90	4.80	9	12	Robertson
0	112	10.50	3.80	10	12	Jackson	5	90	12.80	6.10	9	11	Rockwall
5	96	15.20	6.10	10	12	Jasper	5	90	7.50	3.60	7	11	Runnels
0(3500)	90	37.60	9.90	5	8	Jeff Davis	5	90	15.40	6.70	9	11	Rusk
0	119	12.00	5.20	11	13	Jefferson	5	91	16.70	6.60	9	11	Sabine
0	98	8.70	2.20	9	12	Jim Hogg	5	90	16.50	6.60	9	11	San Augustine
0	105	10.60	2.50	9	12	Jim Wells	5	96	11.60	5.20	10	12	San Jacinto
5	90	9.80	5.10	9	11	Johnson	0	118	11.00	2.70	10	12	San Patricio
5	90	8.20	4.00	7	11	Jones	5	90	7.30	3.80	8	11	San Saba
5	97	17.10	3.80	9	12	Karnes	0	90	7.10	2.60	7	11	Schleicher
5	90	12.30	6.00	9	11	Kaufman	5	90	8.80	3.60	7	11	Scurry
5	90	9.60	3.50	9	11	Kendall	5	90	8.30	4.20	8	11	Shackelford
0	120	8.70	2.20	10	12	Kenedy	5	90	16.30	6.90	9	11	Shelby
5	90	8.60	4.00	7	10	Kent	15	90	13.30	4.10	6	9	Sherman
5	90	7.90	2.90	8	11	Kerr	5	90	14.30	6.40	9	11	Smith
5	90	6.80	2.60	8	11	Kimble	5	90	8.70	4.70	9	11	Somervell
10	90	9.90	4.20	7	11	King	0	98	6.20	1.60	9	12	Starr
0	90	6.80	2.20	8	11	Kinney	5	90	8.60	4.40	8	11	Stephens
0	118	9.70	2.40	10	12	Kleberg	5	90	9.40	3.00	7	11	Sterling
5	90	10.50	4.60	7	11	Knox	5	90	8.50	4.10	7	11	Stonewall
0	90	17.30	7.60	8	11	Lamar	0	90	6.90	2.50	8	11	Sutton
5	90	10.00	3.50	6	8	Lamb	15	90	12.00	3.90	6	9	Swisher
5	90	7.70	3.90	8	11	Lampasas	5	90	11.10	5.50	9	11	Tarrant
0	92	10.40	2.50	9	11	La Salle	5	90	7.90	4.00	7	11	Taylor
5	99	10.90	3.90	9	12	Lavaca	0	90	16.30	4.90	7	10	Terrell
5	91	10.10	4.10	9	12	Lee	5(3200)	90	11.30	3.50	6	8	Terry
5	90	11.50	5.30	9	12	Leon	5	90	9.90	4.70	8	11	Throckmorton
5	106	11.20	4.80	10	13	Liberty	5	90	16.20	7.60	8	11	Titus
5	90	11.20	5.20	9	12	Limestone	5	90	7.70	2.80	7	11	Tom Green
15	90	14.50	5.20	7	10	Lipscomb	5	90	8.90	3.90	9	12	Travis
0	100	13.40	2.90	9	12	Live Oak	5	90	12.20	5.60	10	12	Trinity
5	90	7.50	3.70	8	11	Llano	5	97	13.10	5.80	10	12	Tyler
5	90	19.10	5.10	5	8	Loving	5	90	15.90	7.20	9	11	Upshur
15	90	9.60	3.50	6	9	Lubbock	5	90	12.20	3.40	6	9	Upton
5(3200)	90	10.10	3.40	6	9	Lynn	5	90	8.00	2.40	8	11	Uvalde
5	90	7.00	3.60	8	12	McCulloch	0	90	6.70	2.30	8	11	Val Verde
5	90	9.40	4.70	9	11	McLennan	5	90	12.80	6.20	9	11	Van Zandt
0	96	13.30	2.90	9	11	McMullen	0	110	11.30	3.70	10	12	Victoria
5	90	11.20	5.10	10	12	Madison	5	93	11.30	5.10	10	12	Walker
0	90	16.80	7.90	9	11	Marion	5	97	10.40	4.30	10	12	Waller
0	90	12.70	3.50	6	9	Martin	5	90	22.70	4.50	5	8	Ward
5	90	7.10	3.50	8	11	Mason	5	94	10.40	4.20	10	12	Washington
0	120	9.50	3.80	10	13	Matagorda	0	91	7.80	1.90	9	11	Webb

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
0	108	10.00	4.00	10	12	Wharton	25	90	23.30	7.30	8	11	Caroline
15	90	18.40	5.70	7	10	Wheeler	25(2500)	90	38.00	11.90	6	9	Carroll
5	90	16.40	6.10	8	11	Wichita	20	90	20.60	7.20	8	11	Charles City
10	90	14.90	5.70	8	11	Wilbarger	20	90	24.60	9.00	7	10	Charlotte
0	121	7.30	1.80	10	12	Willacy	20	90	27.00	8.10	8	11	Chesterfield
5	90	8.40	4.00	9	12	Williamson	CS	90	19.10	6.70	6	8	Clarke
5	94	16.70	3.80	9	12	Wilson	CS	90	29.90	9.60	6	9	Craig
5	90	26.20	4.90	5	8	Winkler	30(900)	90	23.00	7.50	7	9	Culpeper
5	90	12.80	5.80	8	11	Wise	25	90	34.20	9.10	7	10	Cumberland
5	90	14.50	6.70	9	11	Wood	15(2600)	90	34.90	11.60	6	8	Dickenson
5(3200)	90	12.30	3.50	6	8	Yoakum	20	90	23.60	8.10	8	11	Dinwiddie
5	90	10.60	5.10	8	11	Young	20	90	18.30	6.50	8	11	Essex
0	94	7.00	1.80	9	11	Zapata	25	90	18.10	6.40	7	10	Fairfax
0	90	8.30	2.30	9	11	Zavala	30(900)	90	19.60	6.90	7	9	Fauquier
							25(2500)	90	33.80	11.00	6	9	Floyd
						UTAH							
						25	90	34.40	8.90	7	10	Fluvanna	
15(5000)	90	72.70	20.80	4	6	Beaver	25	90	27.50	9.90	6	9	Franklin
CS	90	143.30	60.00	4	6	Box Elder	CS	90	19.40	7.00	5	8	Frederick
CS	90	112.40	34.90	4	6	Cache	25(2500)	90	39.80	11.30	6	8	Giles
CS	90	42.60	13.30	4	6	Carbon	15	97	15.90	6.20	8	11	Gloucester
20(6600)	90	34.30	9.40	4	6	Daggett	25	90	33.90	8.80	7	10	Goochland
CS	90	177.70	80.10	4	6	Davis	20(2500)	90*	39.70	12.40	6	8	Grayson
35(6000)	90	38.20	11.50	4	6	Duchesne	30(900)	90	26.00	8.10	8	9	Greene
15(4500)	90	55.10	15.10	4	6	Emery	15	90	19.60	8.20	8	11	Greensville
CS	90	73.40	21.70	4	6	Garfield	20	90	21.30	9.10	7	10	Halifax
15(4500)	90	23.70	6.40	4	6	Grand	20	90	26.10	7.70	8	11	Hanover
CS	90	109.60	33.40	4	6	Iron	20	90	30.20	8.40	8	11	Henrico
10(4800)	90	105.90	32.30	4	6	Juab	20	90	27.90	10.60	6	9	Henry
CS	90	53.80	18.10	4	6	Kane	CS	90	19.30	7.90	6	8	Highland
15(5000)	90	79.20	20.80	4	6	Millard	10	96	15.90	6.40	8	11	Isle of Wight
CS	90	111.40	37.80	4	6	Morgan	15	93	6.70	6.10	8	11	James City
CS	90	80.80	21.20	4	6	Piute	20	90	18.70	6.60	8	11	King and Queen
CS	90	97.90	29.60	4	6	Rich	25	90	19.20	6.70	8	11	King George
CS	90	178.50	77.10	4	6	Salt Lake	20	90	20.40	7.00	8	11	King William
CS	90	22.00	6.20	4	6	San Juan	20	97	15.90	6.10	8	11	Lancaster
CS	90	64.60	20.30	4	6	Sanpete	15(2600)	90	42.60	13.10	6	8	Lee
15(4500)	90	96.70	24.40	4	6	Sevier	30(900)	90	18.50	6.40	6	9	Loudoun
CS	90	64.00	24.50	4	6	Summit	25	90	29.90	8.50	7	10	Louisa
CS	90	88.80	28.60	4	6	Tooele	20	90	23.50	8.80	7	10	Lunenburg
30(6000)	90	35.90	8.90	4	6	Uintah	30(900)	90	24.80	7.90	6	9	Madison
CS	90	115.60	44.70	4	6	Utah	15	103	14.50	6.00	8	11	Mathews
CS	90	86.00	28.60	4	6	Wasatch	20	90	19.70	8.80	7	10	Mecklenburg
CS	90	57.80	18.90	4	6	Washington	20	96	16.60	6.30	8	11	Middlesex
15(4500)	90	64.60	18.90	4	6	Wayne	25(2500)	90	37.20	11.10	6	9	Montgomery
CS	90	173.80	75.70	4	6	Weber	30(900)	90	28.70	8.90	6	9	Nelson
							20	90	19.80	7.00	8	11	New Kent
						VERMONT							
						10	113	12.40	5.70	8	11	Northampton	
40	90	37.70	11.60	4	6	Addison	20	95	15.90	6.10	8	11	Northumberland
CS	90*	26.90	9.10	4	7	Bennington	20	90	26.40	8.70	7	10	Nottoway
60(1000)	90*	34.50	11.20	4	6	Caledonia	30(900)	90	26.50	8.10	7	9	Orange
40	90	43.90	12.80	4	6	Chittenden	CS	90	21.60	7.50	6	8	Page
CS	90*	33.80	11.00	4	6	Essex	20(2500)	90	29.50	11.10	6	9	Patrick
50(900)	90	48.90	13.30	4	6	Franklin	20	90	23.10	9.40	6	9	Pittsylvania
40	90	55.40	13.80	4	6	Grand Isle	25	90	33.70	8.90	7	10	Powhatan
CS	90	36.90	11.80	4	6	Lamoille	25	90	28.90	9.00	7	10	Prince Edward
CS	90*	34.60	11.00	4	6	Orange	20	90	22.70	7.70	8	11	Prince George
CS	90	33.30	11.50	4	6	Orleans	25	90	19.40	6.70	7	10	Prince William
50(900)	90	31.90	10.40	4	6	Rutland	25(2500)	90	40.30	11.80	6	8	Pulaski
CS	90	35.10	11.40	4	6	Washington	30(900)	90	21.00	7.30	6	9	Rappahannock
CS	90*	27.20	9.20	4	7	Windham	20	90	17.60	6.30	8	11	Richmond
CS	90*	32.70	10.40	4	6	Windsor	CS	90	34.00	10.30	6	9	Roanoke
							CS	90	25.70	9.00	6	9	Rockbridge
						VIRGINIA							
						CS	90	24.90	8.20	6	8	Rockingham	
15	114	12.10	5.50	8	11	Accomack	15(2600)	90	40.40	12.40	6	8	Russell
30(900)	90	34.10	9.10	6	9	Albemarle	15(2600)	90	42.00	13.00	6	8	Scott
CS	90	29.70	9.50	6	8	Alleghany	CS	90	19.90	7.20	6	8	Shenandoah
20	90	30.20	8.80	7	10	Amelia	20(2500)	90*	40.70	12.40	6	8	Smyth
30(900)	90	27.10	9.00	6	9	Amherst	15	92	16.90	7.20	8	11	Southampton
25	90	27.40	9.10	6	10	Appomattox	25	90	24.10	7.40	7	10	Spotsylvania
25	90	17.90	6.30	7	10	Arlington	25	90	19.70	6.80	7	10	Stafford
CS	90	27.00	8.60	6	8	Augusta	15	92	17.40	6.70	8	11	Surry
CS	90	23.00	8.60	6	8	Bath	15	90	18.80	7.50	8	11	Sussex
25	90	25.70	9.20	6	9	Bedford	20(2500)	90*	40.20	12.00	6	8	Tazewell
25(2500)	90*	40.90	11.90	6	8	Bland	CS	90	19.80	7.10	6	8	Warren
CS	90	27.40	9.30	6	9	Botetourt	15(2600)	90*	41.70	12.80	6	8	Washington
20	90	19.50	8.30	8	11	Brunswick	20	90	17.80	6.30	8	11	Westmoreland
20(2500)	90	35.50	11.40	6	8	Buchanan	15(2600)	90	37.50	12.10	6	8	Wise
25	90	33.00	9.10	7	10	Buckingham	25(2500)	90*	40.70	12.10	6	8	Wythe
25	90	25.40	9.10	6	9	Campbell	15	96	15.50	6.20	8	11	York

S	W	S _s	S ₁	I1	I2	County Name	S	W	S _s	S ₁	I1	I2	County Name
						WASHINGTON	CS	90	18.70	7.50	5	8	Pendelton
						Adams	20	90	15.20	6.50	5	7	Pleasants
20(1900)	85	32.50	9.70	4	6	Asotin	CS	90	21.40	8.40	5	8	Pocahontas
CS	85	28.90	9.00	4	6	Benton	CS	90	15.80	6.30	5	7	Preston
15(1500)	85	55.90	17.00	4	6	Chelan	20	90	19.50	8.40	5	8	Putnam
CS	85	48.90	15.70	4	6	Clallam	20(2500)	90	29.40	9.60	6	8	Raleigh
CS	85*	124.30	52.10	4	6	Clark	CS	90	17.00	7.10	5	8	Randolph
CS	85	102.50	33.20	4	6	Columbia	20	90	15.70	6.80	5	7	Ritchie
CS	85	39.10	11.60	4	6	Cowlitz	25	90	17.60	7.70	5	7	Roane
15(400)	85*	97.90	37.20	4	6	Douglas	20(2500)	90	33.70	10.00	6	8	Summers
CS	85	45.30	14.30	4	6	Ferry	CS	90	15.80	6.40	5	7	Taylor
CS	85	31.60	9.80	4	6	Franklin	CS	90	16.70	6.80	5	8	Tucker
10(1200)	85	51.00	15.50	4	6	Garfield	20	90	14.60	6.30	5	7	Tyler
CS	85	32.60	9.50	4	6	Grant	CS	90	16.50	7.00	5	7	Upshur
CS	85	43.70	13.60	4	6	Grays Harbor	20	90	22.40	8.90	5	8	Wayne
CS	85*	129.30	60.00	4	6	Island	CS	90	18.70	8.00	5	8	Webster
15(400)	85	123.30	42.00	4	6	Jefferson	20	90	14.00	6.20	5	7	Wetzel
CS	85*	126.00	44.70	4	6	King	25	90	16.80	7.20	5	7	Wirt
CS	85	159.70	55.60	4	6	Kitsap	20	90	16.30	6.90	5	7	Wood
15(400)	85	136.90	48.10	4	6	Klickitat	20(2500)	90	33.60	10.40	6	8	Wyoming
CS	85	52.10	17.10	4	6	Lewis							
CS	85	42.00	14.90	4	6	Lincoln							
15(400)	85	107.50	40.10	4	6	Mason							
CS	85	29.70	9.30	4	6	Okanogan							
20(200)	85	121.70	45.20	4	6	Pacific							
CS	85	46.80	13.90	4	6	Pend Oreille							
CS	85*	150.00	60.00	4	6	Pierce							
CS	85	36.10	9.60	4	6	San Juan							
15(400)	85	123.40	39.70	4	6	Skagit							
20(200)	85	118.20	41.30	4	6	Skamania							
CS	85	114.40	32.60	4	6	Snohomish							
CS	85	61.00	22.00	4	6	Spokane							
15(400)	85	122.90	39.80	4	6	Stevens							
CS	85	31.60	9.20	4	6	Thurston							
CS	85	28.60	9.10	4	6	Wahkiakum							
15(400)	85	118.40	41.40	4	6	Walla Walla							
CS	85*	115.60	51.40	4	6	Whatcom							
20(1900)	85	48.50	14.00	4	6	Whitman							
CS	85	112.10	32.30	4	6	Yakima							
CS	85	28.60	9.00	4	6								
CS	85	48.00	15.90	4	6								
						WEST VIRGINIA	50	90	5.50	2.80	6	7	Eau Claire
CS	90	16.20	6.70	5	7	Barbour	60	90	6.50	2.50	5	6	Florence
CS	90	19.30	6.50	5	8	Berkeley	35	90	8.50	3.80	5	7	Fond du Lac
20(2500)	90	23.90	9.10	6	8	Boone	60	90	6.00	2.70	5	6	Forest
CS	90	17.70	7.70	5	8	Braxton	30	90	8.40	4.20	6	8	Grant
25	90	12.60	5.80	5	7	Brooke	30	90	12.40	5.20	6	8	Green
20	90	21.50	8.70	5	8	Cabell	35	90	8.30	3.70	5	7	Green Lake
25	90	16.80	7.40	5	7	Calhoun	30	90	10.00	4.30	6	8	Iowa
25	90	18.90	8.20	5	8	Clay	60	90	7.00	1.80	5	6	Iron
20	90	15.30	6.60	5	7	Doddridge	50	90	6.10	3.10	6	7	Jackson
20(2500)	90	24.90	9.00	6	8	Fayette	30	90	12.10	4.80	5	7	Jefferson
20	90	16.60	7.20	5	7	Gilmer	40	90	7.80	3.70	5	7	Juneau
CS	90	18.00	7.00	5	8	Grant	30	90	13.60	5.40	5	7	Kenosha
25(2500)	90	28.30	9.30	6	8	Greenbrier	40	90	6.60	3.20	5	7	Kewaunee
CS	90	18.10	6.60	5	8	Hampshire	40	90	6.40	3.40	6	8	La Crosse
25	90	12.60	5.70	5	7	Hancock	30	90	10.90	4.80	6	8	Lafayette
CS	90	18.20	6.90	5	8	Hardy	60	90	5.90	2.80	5	7	Langlade
CS	90	15.60	6.50	5	7	Harrison	60	90	5.70	2.80	5	7	Lincoln
25	90	18.10	7.80	5	7	Jackson	35	90	7.40	3.50	5	7	Manitowoc
CS	90	19.00	6.40	6	8	Jefferson	50	90	5.90	2.80	5	7	Marathon
20	90	20.70	8.60	5	8	Kanawha	60	90	6.00	2.80	5	6	Marquette
CS	90	16.30	7.00	5	7	Lewis	35	90	8.30	3.80	5	7	Marquette
20	90	21.80	8.80	5	8	Lincoln	50	90	6.10	2.90	5	7	Menominee
20(2500)	90	25.90	9.40	6	8	Logan	30	90	11.70	4.60	5	7	Milwaukee
20(2500)	90	36.70	11.10	6	8	McDowell	40	90	6.70	3.40	6	8	Monroe
CS	90	15.30	6.30	5	7	Marion	50	90	6.10	2.80	5	7	Oconto
20	90	13.00	6.00	5	7	Marshall	60	90	6.00	2.60	5	6	Oneida
20	90	18.70	8.00	5	7	Mason	40	90	7.20	3.40	5	7	Outagamie
20(2500)	90	39.60	11.30	6	8	Mercer	30	90	10.10	4.10	5	7	Ozaukee
CS	90	17.30	6.40	5	8	Mineral	50	90	5.40	2.70	6	8	Pepin
20(2500)	90	26.80	9.70	6	8	Mingo	50	90	5.40	2.70	6	8	Pierce
CS	90	15.20	6.20	5	7	Monongalia	50	90	5.50	2.50	6	7	Polk
25(2500)	90	34.80	10.10	6	8	Monroe	60	90	5.70	2.60	5	7	Price
CS	90	19.20	6.40	5	8	Morgan	30	90	12.60	5.20	5	7	Racine
25(2500)	90	21.10	8.50	5	8	Nicholas	30	90	8.20	3.90	6	8	Richland
20	90	12.70	6.00	5	7	Ohio	25	90	13.70	5.30	5	7	Rock
							60	90	5.50	2.60	5	7	Rusk

WISCONSIN

S	W	S _s	S ₁	I1	I2	County Name
50	90	5.50	2.70	6	8	St. Croix
30	90	9.00	4.00	5	7	Sauk
60	90	5.50	1.90	5	7	Sawyer
50	90	6.30	2.90	5	7	Shawano
35	90	8.30	3.80	5	7	Sheboygan
50	90	5.60	2.70	5	7	Taylor
50	90	5.60	3.00	6	8	Trempealeau
35	90	7.20	3.60	6	8	Vernon
60	90	6.50	2.50	5	6	Vilas
25	90	14.30	5.40	5	7	Walworth
60	90	5.40	2.30	5	7	Washburn
30	90	10.20	4.10	5	7	Washington
30	90	12.00	4.80	5	7	Waukesha
40	90	7.00	3.30	5	7	Waupaca
40	90	7.70	3.50	5	7	Waushara
35	90	7.80	3.60	5	7	Winnebago
50	90	6.80	3.20	5	7	Wood

WYOMING

20(6600)	90	24.30	6.20	4	6	Albany
15(5500)	90*	24.60	6.30	4	6	Big Horn
20(4500)	90	32.90	6.40	4	6	Campbell
20(6600)	90	33.40	7.80	4	6	Carbon
15(5500)	90	37.90	7.70	4	6	Converse
25(4800)	90	17.40	4.80	4	6	Crook
15(5500)	90*	41.20	9.00	4	6	Fremont
15(5500)	90	17.60	5.20	4	6	Goshen
15(5500)	90	32.70	7.90	4	6	Hot Springs
15(5500)	90*	36.90	7.30	4	6	Johnson
20(6600)	90	18.60	5.60	4	6	Laramie
CS	90	65.00	22.60	4	6	Lincoln
15(5500)	90	34.60	7.80	4	6	Natrona
15(5500)	90	23.10	5.80	4	6	Niobrara
CS	90	27.20	9.10	4	6	Park
20(4500)	90	28.40	6.30	4	6	Platte
20(4500)	90*	27.00	6.00	4	6	Sheridan
CS	90*	41.20	13.30	4	6	Sublette
20(6600)	90*	36.40	9.10	4	6	Sweetwater
CS	90	147.20	59.80	4	6	Teton
CS	90	89.90	29.60	4	6	Uinta
15(5500)	90*	29.00	6.90	4	6	Washakie
20(4500)	90	18.40	5.10	4	6	Weston
CS	90	--	--	4	6	Yellowstone NP