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# WESTINGHOUSE BUILDING 4 TECHNICAL ASSIGNMENT 1



Jonathan Fisher, CM Robert Leicht 10/4/2010



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### **Executive Summary**

Technical Assignment One is intended to bring to light the existing conditions, contractual agreements, cost analysis, and building parameters that led to the building of Westinghouse Building 4 in Cranberry, PA. Westinghouse Electric Company has recently added 121,905 square feet of office space to their brand new headquarters facility in the form of a separate yet nearby building called Westinghouse Building 4. This new building is owned by The Ferchill Group out of Chicago, IL and is currently in its final stages of construction under the supervision of Turner Construction who is serving as the project General Contractor. The project is a 15 month project and is due to be occupied in early November of 2010. The Ferchill Group decided that a traditional design-bid-build delivery method would be most effective way to deliver this project. This was unexpected considering buildings 1, 2, and 3 on the same site were built in the past 2 years and to keep conformity amongst buildings a design-build delivery method might have been easier.

The actual cost of the building was just over the square foot building estimate conducted using RS Means 2010. This was unexpected because Building 4 has a standard office building layout, maximizing open floor space. More information is needed on exact building materials including windows to accurately determine what added to the cost of the building. Exact contractual agreements between Turner Construction and the subcontractors still requires more direct feedback to determine. However, LLI Engineering and IKM Incorporated have formed the backbone of the architectural and engineering design aspects of the building while holding a joint venture agreement between the two companies. Exactly why this joint venture was pursued requires direct feedback from the companies themselves and has not been ascertained at this time.

This project had a relatively small on site Turner Construction presence and managed to receive its Certificate of Occupancy three months before the scheduled date. Achieving this feat was a product of hard work by the local subcontractors and excellent building planning and scheduling on Turner Construction's part.



### PROJECT SCHEDULE SUMMARY

Activity ID	Activity	Start	Finish	Duration
4689	Design	25-Aug-09	10-Nov-09	77
5946	Excavation	1-Nov-09	30-Nov-09	29
1000	Slab on Grade	14-Dec-09	15-Jan-10	32
1007	Steel Erection	6-Jan-10	25-Jan-10	19
1008	Metal Deck	12-Jan-10	4-Feb-10	23
1050	Stairs	21-Jan-10	8-Feb-10	18
1009	Slab on Deck	4-Feb-10	26-Feb-10	22
1060	SOFP	23-Feb-10	18-Mar-10	23
2100	Ductwork	24-Feb-10	22-Apr-10	57
1450	Interior Metal Framing	26-Feb-10	22-Apr-10	55
1180	Sprinkler Mains and Branches	1-Mar-10	28-Apr-10	58
1130	Sprinkler Standpipes	8-Mar-10	19-Mar-10	11
1021	<b>Remove Weather Protection</b>	12-Mar-10	19-Mar-10	7
2300	Electric Building Rough-In	12-Mar-10	23-Apr-10	42
1140	Plumbing Rough-In	15-Mar-10	28-Apr-10	44
2400	Drywall Tape and Finish	22-Mar-10	25-Jun-10	95
1100	Masonry	29-Mar-10	17-May-10	49
2117	Mechanical Piping	29-Mar-10	5-Apr-10	7
2109	Set Efs 1-3	14-Apr-10	11-Jun-10	58
1110	Glass and Glazing	3-May-10	11-Jun-10	39
1120	Metal Panels	10-May-10	8-Jun-10	29
2600	Ceilings	8-Jun-10	30-Jul-10	52
3200	<b>Toilet Fixture Installation</b>	16-Jun-10	18-Jun-10	2
2500	Painting	28-Jun-10	29-Jul-10	31
2800	Finish Power	28-Jun-10	30-Jul-10	32
3100	Lighting	2-Jul-10	5-Aug-10	34
3300	Flooring	8-Jul-10	10-Aug-10	33
11400	Punchlist	16-Jul-10	24-Aug-10	39
4000	Startup and Testing	2-Aug-10	27-Aug-10	25
11440	Owner Training	2-Aug-10	13-Aug-10	11

The key element of the foundation on this project was the pouring of the slab on grade. The completion of this process meant that all of the foundation piles had been completed and steel erection could then begin. The placing of the last beam of the top floor of the building was a milestone for this project. Being that the building is only three stories high, the constructor waited until all steel erection was complete to move on to the steel decking placement on each floor. The completion of the punch list was a major milestone of the finishes portion of the project. The completion of this process marked

the ability to commence building startup and testing. A ghant chart showing the sequence of tasks is shown below.







Westinghouse Building 4

YES	NO	Work Scope
	Х	Demolition
Х		Structural Steel Frame
Х		Cast In Place Concrete
	Х	Precast Concrete
Х		Mechanical System
Х		Electrical System
Х		Masonry
	Х	Curtain Wall
Х		Support of Excavation

### **BUILDING SYSTEMS SUMMARY**

**Structural Steel Framework**: Structural steel frame is braced using L3X3X5/16 in a cross braced formation. The bracing is attached using typical wind moment connections. The 4 1/2" thick concrete that makes up each floor is reinforced using 4" high 3/4" dia. steel shear studs that are welded to the wide flange joists supporting the floor.

<u>Cast in Place Concrete</u>: Cast in place concrete shall be used in building frame elements, walls, foundations, slabon-deck, slabs-on-grade, and mechanical equipment pads. The formworks for the CIP concrete shall conform to ACI 301 chapter 4 and ACI 347. All formwork is required to be supported underneath and never supported using the structural steel members of the building.

<u>Mechanical Systems</u>: There are 2 mechanical rooms on each floor of the building. These rooms are directly across the corridor from the stairwell on both sides of the building. The mechanical systems in the building include; 2 roof top air handlers, 2 rooftop evaporative cooling units, and a standpipe sprinkler system among many other systems. On every floor of the building there are several fire extinguisher hubs where personal fire suppression systems can be found.



**Electrical System**: Westinghouse Building 4 is fed by the utility company by a 1500 KVA transformer outside the building. The main switchgear of the building is a 3200A, 480/277V, 3PH, 4W, 65KAIC symmetrical system. The electrical rooms on each floor are fed 500A a piece through 2 sets of 4-500kcmil and 1 #1/0 GND all in 3" conduit. Once in the electrical room the electricity is distributed to the lighting panel board, general purpose and café panel board, and two electrical equipment panel boards. In the event of a power outage the building can be fed by a diesel generator outside the

# October 4, WESTINGHOUSE BUILDING 4

building. The generator can only deliver 600A to the building so only emergency and essential systems can be run on backup power.

**Masonry**: The exterior façade of Westinghouse Building 4 contains three separate layers of 4" polished masonry brick. The total square footage of masonry brick is approximately 19,440 SQFT appearing in 3 separate layers going up the building.

**LEED Certification**: The main LEED certification attempt with this building is in its large windows on each floor. These large windows are accompanied by light sensors on each floor, which automatically dim the lights during the day and save electricity. All areas of the building are also equipped with motion sensors to the lights are off while the building is unoccupied.



### **PROJECT COST EVALUATION**

# **RS Means Square Foot Estimate**

	Sq. ft. Adju	stment		
Square Footage	65,000	80,000	121,905	
Approx. Cost	\$162.30	\$158.80	\$150.14	
		Total Buildi	ng Cost	
	121,905 sq.	ft. * \$150.14/s	q. ft. = \$18,302	,816.70
	L	ocation Adj	ustment	
	\$18.30	2.816.70 * .96	= \$17.570.704.	03

	<u>Building E</u>	Element Cost Breakdo	<u>own</u>
Build	ing Element	% of Total Building Cost	Element Cost
A. Substruct	ure		
1030	Slab On Grade	4.30%	\$755,540.27
B. Shell			
1010	Superstructure	9.60%	\$1,686,787.59
2010	Exterior	16%	\$2,811,312.64
	Enclosure		
3010	Roofing	1.70%	\$298,701.97
C. Interiors			
1010	General	22.90%	\$4,023,691.22
D. Services			
1010	Conveying	9.00%	\$1,581,363.36
2010	Plumbing	3.20%	\$562,262.53
3010	HVAC	12.20%	\$2,143,625.89
4010	Fire Protection	3.20%	\$56,226,252.90
5010	Electrical	17.80%	\$3,127,585.32

### **Assumptions**

- 1. Building has a Glass and Metal Curtain Wall
- 2. Building has a Steel Frame
- 3. Extrapolation yields a square footage cost of \$150.14 per sq. ft.
- 4. Building Location is Butler, PA and has a location adjustment of .94

To evaluate the cost of the Westinghouse Building 4 project a D4 Cost analysis and an RS Means square foot cost estimate were conducted to compare to the actual cost of the project. The RS Means estimate was conducted using the square footage numbers for a 3 story office building. A rough extrapolation was done to estimate a building of such large square footage. The RS Means overall building cost estimate was close to the actual cost because this building is a standard office building with minimal efficiency and system upgrades. The 4D Cost analysis was very low even though the building's overall square footage is almost identical and number of floors is the same. I believe this difference is because the D4 Cost building has an overall height of 40 feet. This differs from Westinghouse's 110 foot tall building. It is likely that the building used in the D4 Cost analysis has a basement that only spans half the building and is not usable office space.

### SITE PLAN of EXTISTING CONDITIONS



(See site plan in appendix for clearer image)



Westinghouse Building 4

### LOCAL CONDITIONS

Westinghouse Building 4 is being built in Cranberry Pennsylvania in the Cranberry Woods office building complex. The building site can be accessed through the back entrance to the Westinghouse property. Being that Building 4 is in an office complex, rush hour times were avoided for truck deliveries. The township of Cranberry had major congestion problems involving route 79 and the PA turnpike exits that both emptied into the already busy streets of route 19. To fix this problem, the township of Cranberry added an extra lane of traffic on route 228 from route 79 that leads directly to the driveway of the Westinghouse Complex. This addition keeps all Westinghouse traffic from having to enter the streets of downtown Cranberry.

New construction in Cranberry Township is on the rise so construction companies and crews are abundant in the area. Westinghouse just completely its new main headquarters building just a few hundred yards from Building 4 so many of the subcontractors were able to continue work on this building after the main buildings were completed. Contractor parking on the site is no problem because the parking lots for the Westinghouse buildings were completed when the main headquarters was constructed.

A subsurface investigation was done at the site of Building 4 involving twenty four test borings. These tests revealed that the residual soil on the site will likely be able to be used as backfill, however pending laboratory tests the soil may require drying first. The geotechnical report also revealed that groundwater would likely be encountered during the excavation process. Subsurface drains and possibly pumps will be required on site during the excavation.

### **CLIENT INFORMATION**

Westinghouse Building 4 is owned by The Ferchill Group, but is being built for the Westinghouse Electric Company. In recent years Westinghouse has expanded tremendously and required more office space for the employees. Westinghouse was forced to relocate from their previous building in



Monroeville Pennsylvania due to zoning complications involving building additions. In the summer of 2009 Westinghouse employees began moving into their new home in the Westinghouse headquarters building 1, 2, and 3. During this move Westinghouse was still expanding faster than the pace of construction so additional office space was leased inside the Cranberry Woods complex. Out of necessity, due to this expansion, Westinghouse began immediate construction on Building 4 even before Building 2 and 3 were 100% complete. It is very important to Westinghouse that Building 4 is completed on time so they can begin moving out of their leased space and into their new building. In addition, having their employees in different buildings creates problems when scheduling meetings and other company events.

Schedule was the biggest factor for the Building 4 project in the eyes of Westinghouse. It was very important to the leaders of the company that their employees be able to move into the new building. All parties involved in the project held safety to the highest standards on the site as well. An Owner Controlled Insurance Program or OCIP was used for this project, which meant a city safety employee could be brought in as a third party safety manager on the site. Westinghouse is expanding very quickly right now largely due to their new safety systems that they are incorporating into their new power plant designs and the last thing they would want is negative publicity about safety on the headquarters buildings.

Cost and quality were also taken into consideration in the planning of this building. The cost was to be kept down while the quality was to be maximized and mimic that of the main buildings. The interior finishes and the general exterior facades of the building were also meant to be similar to those of the main 3 buildings. The keys to completion of the project in the owner's eyes are that it is finished and occupied on time. Furnishing the interior of the building on time and correctly running all low voltage technology wire are also key completion criteria.



### PROJECT DELIVERY SYSTEM

The Westinghouse Building 4 project is being delivered using a Design-Bid-Build delivery method. Turner Construction won the bid for this building and is carrying it out using lump sum contracts for the design team and guaranteed max price for all of their subcontractors. LLI/IKM is a joint venture architecture and engineering company and designed Westinghouse Building 4.



The traditional design-bid-build delivery method allows The Ferchill Group to have limited involvement in the project. This is important to them because they are based out of Chicago, IL. Subcontractors are local and were chosen on a lowest bid basis. Many of the subcontractors used for Building 4 also worked on Westinghouse Buildings 1, 2 and 3. The Ferchill Group owns all insurance policies for the project. The project guaranteed max price is based on a subcontractor breakdown of all of the system costs. Turner retains the ability to withhold 10% of all subcontractor contracts until 50% of the total project price has been completed. Subcontractors that complete their work early con apply for an early release of their retention should they so desire.

### **STAFFING PLAN**

Below is an organizational chart that shows the CM/GC staff and how they are assigned to the project. Turner Construction is the CM on the project and has a project executive that oversees the entire project and reports important information back to Turner headquarters. Directly reporting to the project executive are the project engineer and the project manager. The project manager spends most of his time behind the scenes ensuring that orders and materials arrive on time to the site. Reporting to the PM and reporting directly to the project executive is the project superintendent. This person is responsible for enlightening upper management of what is going on out on the jobsite. On this project there is also an assistant project manager that also reports to the project PM.



# Appendix A





# <u>Appendix B</u>

# Cost Evaluation Sources

Prepared By:         EDis Company 110 S. Poptar Street, #400 Wilmington, DE 19801 Fax:         Prepared For:           Building SG, Size:         120000         Site SG, Size:         447609 Biti Date:         Fax:           Building SG, Size:         120000         Site SG, Size:         447609 Biti Date:         Fax:           No. of fuors:         3         Foundation:         COM           No. of building us:         Fax:         Foundation:         COM           No. of building us:         Fax:         Foundation:         COM           No. of building us:         Foundation:         COM         Foundation:         COM           No. of building us:         Fax:         Foundation:         COM         Foundation:         COM           1 SE Floor Size:         40000         Floor Type:         CAR         Folor Type:         CAR           Division         General Requirements         4.71         4.32         518.50           03         Concrete         14.11         12.83         1.551.80           04         Metals         8.95         8.21         985.00           05         Metals         8.95         8.21         985.00           06         Wood & Plastics         7.36         6.75			Conectiv Services (	Call Center - Ju	l 1998 - NJ - Other		
110 S. Poplar Street, #400         Fax:         Fax:         Fax:           Building Sq. Size: 120000         Site Sq. Size: 447609         Bid Date:         7/1/1998           Building Sq. Size: 120000         Site Sq. Size: 447609         Bid Date:         7/1/1998           No. of floors: 13         Foundation: CON         Foundation: CON           No. of buildings: 1         Exterior Walls: DRY         Foundation: CON           No. of buildings: 1         Exterior Walls: DRY         Foundation: CON           1st Floor Height: 13         Roof Type: CAR         Project Height: 432           Division         Percent         Sq. Cost         Amount           01         General Requirements         4.71         4.322         518,50           03         Concrete         14.11         12.93         1.551,80           04         Metals         8.95         8.21         985,00           05         Metals         8.95         8.21         985,00           06         Wood & Plastics         7.36         6.75         809,70           07         Thermal & Moisture Protection         1.86         1.70         204,40           08         Doors & Windows         7.50         6.88         825,00		Prepared By:	EDiS Company		Prepared For:		
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14         Conveying Systems Elevators         1.35         1.24         148,70           15         Mechanical Mechanical         22.92         21.01         2,521,70           16         Electrical Electrical         16.28         14.93         1,791,30           Total Building Costs         100.00         91.67         11,000,90           02         Site Work Site Work         100.00         2.85         1,273,50	11	Equipment Food Service		3.78 3.78		3.46 3.46	415,70 415,70
15         Mechanical Mechanical         22.92 22.92         21.01 2.01         2.521.70 2.521.70           16         Electrical Electrical         16.28         14.93 14.93         1,791.30           Total Building Costs         100.00         91.67         11,000.90           02         Site Work Site Work         100.00         2.85         1,273.50	14	Conveying Syster Elevators	ms	1.35 1.35		1.24 1.24	148,70 148,70
16         Electrical         16.28         14.93         1,791,30           16         Electrical         16.28         14.93         1,791,30           Total Building Costs         100.00         91.67         11,000,90           02         Site Work         100.00         2.85         1,273,50           Site Work         100.00         2.85         1,273,50	15	Mechanical Mechanical		22.92		21.01 21.01	2,521,70 2,521,70
Total Building Costs         100.00         91.67         11,000,90           02         Site Work         100.00         2.85         1,273,50           Site Work         100.00         2.85         1,273,50	16	Electrical Electrical		16.28 16.28		14.93 14.93	1,791,30
Total Building Costs         100.00         91.67         11,000,90           02         Site Work         100.00         2.85         1,273,50           Site Work         100.00         2.85         1,273,50							
02 Site Work 100.00 2.85 1,2/3,30 Site Work 100.00 2.85 1,273,50	Total Bu	uilding Costs		100.00		91.67	11,000,90
	02	Site Work Site Work		100.00		2.85	1,273,50 1,273,50

# RS Means Cost Estimate

OF BEEC	12' story beigh	ed for a 3 story building	Off	ice,	2-4 9	Story
of fl	oor area		Unit	Unit Cost	Cost Per S.F.	% Of Sub-Tote
A. 1	SUBSTRUCTURE					See.
1010	Standard Foundations	Poured concrete; strip and spread factings	S.F. Ground	0.84	2.28	1
1020	Special Foundations	N/A	-	-	-	
1030	Slob on Grade	A" teinfarced concrete with vapor borrier and granular base	S.F. Slab	4,77	1.59	4.3%
2010	Basement Excavation Reserved Wolls	Site preparation for slob and trench for foundation wall and loating	S.F. Ground	.18	1.06	
B. 5	SHELL		LIT. Mai	1	1.00	-interest
	B10 Superstructure					
1010	Floor Construction	Open web steel joists, slab form, concress, columns	S.F. Floor	15.72	10.48	0.0
1020	Roof Construction	Metal deck, open web steel joists, columns	S.F. Roof	5.67	1.89	9.07
	820 Exterior Enclosure			110-110	-S- Conto	11-1-1
2010	Exterior Worls	Face brick with concrete black backup 80% of war	S.F. Wall	30.30	15.71	
2030	Exterior Doors	Auntrum and class, holiow metal	Each	1196	3.97	10.03
	B30 Roofing		STELES IN		1	The later
0106	Roaf Coverings	Buil-up tar and gravel with Roshing; perite/EPS composite	S.F. Roof	0.00	2.22	1
3020	Roaf Openings	N/A	-	-	-	1.7%
C. II	NTERIORS		9.010 mil	1.1.1		
010	Poritions	Gypsum board as noted study 20 S.F. Floor/L.F. Partition	S.F. Partition	9.30	3.72	
020	Interior Doora	Single leaf hollow metal 200 S.F. Floar/Door	Each	1001	5,01	
010	Sinir Coastruction	Committee Filed metal and	S.F. Floor	1.05	1.05	00.04
010	Wall Finishes	60% virvel wall asvering, 40% paint	Flight S.E. Surface	12,275	4.30	22.9%
020	Roor Finishes	60% corpet, 30% viryl composition file, 10% coronic file	S.F. Floor	7.75	7.75	
1030	Ceiling Finishes	Mineral fiber file on conceEled zee bars	S.f. Ceiling	6.51	6.51	
D. 5	ERVICES				Ender State	
199	D10 Conveying					10175
10.2 C	bland such and the second s	have barden alle mer personal elawaters	linch	115.400	11 6.6	
020	Excelators & Moving Wells	N/A	EDEN	ind'end	11,00	9.0%
020	Escelators & Moving Welks	N/A	-	-	-	9.0%
010	Escalators & Moving Wells D20 Plumbing Pumbing Facures	N/A         Tollar ord service fixtures, supply and drainage         1 Februar/1220 S.F. Flage	- Each	-	- 3.16	9.0%
010 020 010 020	Escelators & Moving Wells D20 Plumbing Plumbing Fixures Darrestic Water Distribution	Toiler and service Returns, supply and drainage         1 Flature/1220 S.F. Flater           Gas find water heater         1	Each S.F. Floar	- 4171 .41	- 3.16 .41	9.0%
010 020 010 020 040	Excelators & Moving Welks Excelators & Moving Welks D20 Plumbing Plumbing Facures Domestic Water Disinibution Rain Water Disinioge	N/A N/A Toiler and service fixtures, supply and dratnage Gas find water heater Roof drains	Each S.F. Floor S.F. Roof	- 4171 .41 1.68	- 3.16 .41 .50	9.0%
010 020 010 020 040	Exectators & Moving Wells Exectators & Moving Wells D20 Plumbing Pumbing facures Danestic Water Disinibition Rain Water Disinibition Rain Water Disinibition D30 HVAC Exerct Stock	Not reparticle particles for elevations N/A Toiler and service Returnes, supply and drainage Gas find water heater Roof drains	Boch S.F. Floor S.F. Roof	4171 .41 1.68	- 3.16 .41 .50	9.0%
010 020 010 020 040 010 020	Executions & Das Executions & Moving Wolks <b>P20 Plumbing</b> Pumbing features Pametric Water Disinibilition Rain Water Desinage <b>D30 HVAC</b> Exergy Supply Hoor Generating Systems	N/A N/A Toiler and service Returns, supply and drainage Gas find water heater Roof drains N/A Included in 20050	Boch S.F. Floar S.F. Roof	4121 .41 1.68	- 3.16 .41 .56	9.0%
010 020 020 020 040 020 020 030	Executions & Data Executions & Moving Wells Planbing Facures Damestic Water Disinitation Rain Water Disinitation Rain Water Disinitation Rain Water Disinitation Rain Water Disinitation Bangy Supply Hoor Generating Systems Cooling Generating Systems	N/A Toiler and service Returns, supply and drainage Gas find water heater Roof drains N/A Included in 20050 N/A	Boch S.F. Floar S.F. Roof	4121 .41 1.68	3.16 .41 .50	9.0% 3.2% 12.2 %
010 020 020 020 020 020 020 030 030 050	Exectators & Moving Wells Exectators & Moving Wells Planbing Facures Domestic Water Disinitation Rain Water Desinage D30 HVAC Energy Supply Hoor Generating Systems Cooling Generating Systems Terminal & Pockage Units	N/A N/A N/A N/A N/A N/A N/A N/A	Boch S.F. Fibar S.F. Roof	4121 411 1.68 - - - - - - - - - - - - - - - - - - -	3.16 .41 .50 - - 15.70	9.0% 3.2% 12.2 %
010 020 020 020 020 020 020 020 020 030 03	Exectators & Moving Wells Exectators & Moving Wells D20 Plumbing Pumbing fracues Danestic Water Disiribution Rain Water Disknege D30 HVAC Energy Supply Hoor Generating Systems Cooling Generating Systems Terminal & Pockage Units Other HAIC Sys. & Equipment D40. Soc. Require	N/A     Toiler and service Returns, supply and drainage     1 Fieldure/1320 S.F. Floor       Gas find water heater     Roof drains       N/A     Included in D0050       N/A     Authorne usit gas heating, electric cooling       N/A	Boch S.F. Fibor S.F. Roof 	4121 .41 1.68	3.16 .41 .56 - - 15.70 -	9.0% 3.2% 12.2 %
010 020 020 020 020 020 020 020 020 030 050 050 090	berona a uns bordato & Moving Wells <b>Dorotato &amp; Moving Wells</b> <b>Dorotatic Water Distribution</b> Rain Water Distribution Rain Water Distribution Rain Water Distribution <b>Rain Water Distribution</b> <b>Rain Water </b>	N/A Tollar and service fictures, supply and drainage Gas find water heater Roof drains N/A Included in D2050 N/A Multicone usitiges heating, electric cooling N/A Wet nine satisfier suiters	Boch S.F. Fibor S.F. Roof 	4121 .41 1.68	3.16 .41 .56 - - 15.70 -	9.0% 3.2% 12.2 %
010 020 040 040 030 030 050 090 010 020	Berchard & Units Exercitors & Moving Wells <b>D20 Plumbing</b> Planbing Facures Darretic Water Distribution Rain Water Distribution Rain Water Distribution Rain Water Distribution Rain Water Distribution Rain Water Distribution B30 HWAC Energy Supply Hort Generating Systems Carling Generating Systems Terminal & Package Units Chier HWAC Sys. & Equipment D40 Fire Protection Sprinklars Stands/pes	N/A Tollar and service fictures, supply and drainage Cas find water heater Red drains N/A Included in D2050 N/A Wet pipe sprinkler system Standpless and have system	Boch S.F. Floor S.F. Roof S.F. Roof S.F. Floor S.F. Floor S.F. Floor	41/21 _41 1.60 	- 3.16 .41 .50 - 15.70 - 15.70 - 3.33 .81	9.0% 1.2% 12.2 % 3.2%
010 020 040 040 030 050 090 010 050 090	Exercitors & Units Exercitors & Moving Wells <b>D20 Plumbing</b> Planbing Facures Dometic Water Disinfution Rain Water Disinfution Rain Water Disinfution Rain Water Disinfution <b>D30 HWAC</b> Energy Supply Hort Generating Systems Cooling Generating Systems S	N/A     Toflar and service fictures, supply and drainage     1 Ficture/1320 S.F. Floor       Gas find water heater     Reaf drains       N/A     Included in D0050       N/A     N/A       Multicone usit gas heating, electric cooling       N/A       Wet pipe sprinklar system	Boch S.F. Fibor S.F. Roof S.F. Roof S.F. Fibor S.F. Fibor S.F. Fibor	4121 411 1.68 	3.16 41 .56 - 15.70 - 3.33 .81	9.0% 3.2% 12.2 % 3.2%
010 020 020 020 020 020 020 020 020 030 050 050 090 010 010 020	Exercitors & Moving Wells Exercitors & Moving Wells <b>D20 Plumbing</b> Plumbing Facures Darnetic Water Distribution Rain Water Distribution Rain Water Distribution <b>D30 HVAC</b> Energy Supply Hort Gereneting Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Terminal & Package Units Cher HVAC Sys. & Equipment <b>D40 Fire Protection</b> Sprinklines Standorpes <b>D50 Electrical</b> Electrical Service/Distribution	N/A     Toflar and service fictures, supply and drainage     1 Facture/1320 S.F. Floor       Gas find water heater     Read drains       N/A     N/A       N/A     N/A       Multicone unit gas heating, electric cooling       N/A       Wet pipe sprinklar system       Standpipes and have systems       1000 anpere service, panel board and freders	Booh S.F. Fibor S.F. Roof S.F. Roof S.F. Fibor S.F. Fibor S.F. Fibor	4121 .41 1.60 - 1570 - 3.33 .81 4.49	3.16 41 56 	9.0% 3.2% 12.2 % 3.2%
010 020 020 020 020 020 020 020 020 020	Exercitors & Moving Wells Exercitors & Moving Wells Data Structures Darrestic Water Distribution Rain Water Distribution Rain Water Distribution Bain Water Distribution Bain Water Distribution Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Distribution Standolpes Distributions Bainteol Service/Distribution Lighting & Branch Writing	N/A     Tollar and service fictures, supply and drainage     1 Floture/1220 S.F. Floor       Gas find water heater     Road drains       N/A     Included in 20050       N/A     Multicone wait gas heating, electric cooling       N/A       Wet pipe sprinkler system       Standpres and have systems       1000 anpare service, panel board and feeders       High efficiency fluorescent fictures, receptacies, switches, A.C. and mise, power	Booh S.F. Fibor S.F. Roof S.F. Roof S.F. Fibor S.F. Fibor S.F. Fibor	4171 .41 1.60 - 1570 - 3.33 .81 4.49 11.48	3.16 41 56 	9.0% 3.2% 3.2%
D10 020 010 020 040 020 040 020 030 050 050 050 050 090 010 020 050 050 050 050 050 050 050 050 05	berona a una Exercitors & Moving Wells Decretors & Moving Wells Danesic Water Dainbeiton Rain Water Dainbeiton Rain Water Dainbeiton Rain Water Dainbeiton Dato HVAC Energy Supply Host Geranting Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems District Systems District Systems District Systems Commiscations & Security Commiscations & Security Commiscations & Security	N/A       Tollar and service fictures, supply and drainage       1 Ficture/1220 S.F. Floor         Gas find water heater       Red drains       1 Ficture/1220 S.F. Floor         N/A       Included in D0050 N/A       N/A         N/A       Note wait gas heating, electric cooling       N/A         N/A       N/A       Note wait gas heating, electric cooling         N/A       N/A         Wet pipe sprinkler system       Standpipes and have systems         1000 anpare service, panel board and feeders       High efficiency Russesent fictures, receptacies, writches, A.C. and mise, power         Addressable nicm system, immer and plane writig, and ensergency lighting       Forecases and the system state.	Booh S.F. Floor S.F. Roof S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 1.48 6.67	3.16 41 56 	9.0% 3.2% 12.2 % 3.2% 17.8%
010 020 020 020 020 020 020 020 020 030 050 050 050 050 050 050 050 050 05	Bertona & Utis Exercitors & Moving Wells Dorotors & Moving Wells Darrestic Water Disingtifier Rain Water Disinger Data Hwkc Energy Supply Hort Gerarching Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Standopter D40 Fire Protection Spristices Standopters D50 Electrical Electrical Service/Distribution Lighting & Branch Willing Communications & Security Coher Electrical Systems	N/A       Toflar and service fictures, supply and drainage       1 Facture/1320 S.E. Floor         Gas find water heater       Red drains       1 Facture/1320 S.E. Floor         N/A       N/A       N/A         N/A       N/A       N/A         N/A       N/A       N/A         N/A       N/A       N/A         Wet pipe sprinklar system       Standaptes and have systems         1000 anpere service, panel board and feeders       High efficiency Howescent fictures, receptacies, switches, A.C. and misc. power         Addiesable alorm systems, imamer and plane witing, and energency lighting       Emergency generator, 7.5 kW, uninterruptible power supply	Booh S.F. Floor S.F. Roof S.F. Roor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 11.48 6.67 .23	3.16 41 56  15.70  3.33 .81 11.48 6.67 	9.0% 1.2% 12.2 % 3.2% 17.8%
D10 020 010 020 040 020 030 020 050 050 050 050 090 010 020 010 020 010 020 050 090 0 10 020 050 090	Compensa & Units Decisions & Moving Wells Decisions & Moving Wells Darrestic Water Disribution Rain Water Disribution Rain Water Disribution Rain Water Disribution Rain Water Disribution B30 Hwkc Energy Supply Hoor Generating Systems Cooling Generating Systems Commence on the Systems Commence of the Systems Commence of Systems Commence Commence of Systems Commence Commence of Systems Commence Comm	N/A Totlar and service fictures, supply and drainage Gas find water heater Read drains N/A N/A N/A N/A N/A N/A N/A N/A N/A Wet pipe sprinklar system 1000 ampare service, panel board and feeders High efficiency fluorecent fictures, receptacies, switches, A.C. and mise, power Addressable nicm systems, imamer and phase writing, and energency ighting Emergency generator, 7.5 kW, uninterruptible power supply GS N/A	Boch S.F. Floor S.F. Roof S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 11.48 6.67 .23	3.16 41 56 	9.0% 1.2% 12.2 % 3.2% 17.8%
D10 020 010 020 010 020 020 020 020 020 0	Bernitons & Moving Wells     Excelators & Moving Wells     Danestic Water Danestic     Numbing Facures     Danestic Water Danestic     Marc Danestic     Water Danestic     Son Hvac     Energy Supply     Host Gerensting Systems     Cooling Generating Systems     Standorpes     D30 HVac     Bathcol Systems     Standorpes     D30 Electrical     Electrical Systems     Commercial Equipment     Inthinianal Equipment     Inthinianal Equipment	N/A     Totlar and service fictures, supply and drainage     1 Facture/1220 S.E. Floor       Gas find water heater     Red drains       N/A     N/A	Booh S.F. Floor S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 11.48 6.67 .23	3.16 41 56 	9.0% 3.2% 3.2% 3.2%
010 020 010 020 010 020 030 050 050 050 050 050 010 020 010 020 010 020 010 020 030 020 010 020 030 020 030 030 030 030 030 030 03	berona a una berona a una berona a una berona a una participal par	N/A     Totlar and service fictures, supply and drainage     1 Fadure/1220 S.E. Floor       Gas find water heater     Red drains       N/A     Included in D0050       N/A     N/A       N/A     Noter seater       1000 anpare service, panel board and feeders       High efficiency fluorescent fictures, receptacies, writches, A.C. and mise, power       Addressable niorm systems, immer and phase writing, and ensergency lighting       Ensergency generator, 7.5 kW, uninterruptible power supply	Booh S.F. Floor S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 1.48 6.67 .23	3.16 41 56 	9.0% 1.2% 12.2 % 3.2% 17.8%
D10 020 010 020 010 020 030 050 050 050 050 050 050 050 050 05	berona a clus Exercitors & Moving Wells Doctores & Moving Wells Doctores & Moving Wells Doctores & Water Dainlage Danestic Water Dainlage Danestic Water Dainlage Date Water Dainlage Date Water Dainlage Hoot Geranting Systems Carling Generating Systems Date Geranting Systems Date Geranting Systems Date HMC Sys. & Equipment D40 Fire Protection Standolpes D50 Electrical Electrical Service/Distribution Lighting & Branch Wining Commiscillows & Security Other Electrical Systems DUIPMENT & FURNISHIM Commercial Equipment Whitous Equipment Whitous Equipment Other Equipment	N/A     Totlar and service fictures, supply and drainage     1 Fedure/1220 S.F. Floor       Gas find water heater     Red drains     1 Fedure/1220 S.F. Floor       N/A     Included in D0050     N/A       N/A     Included in D0050     N/A       N/A     Net pipe sprinkler system     Standpress and heat systems       1000 anpare service, panel board and feders     High efficiency fluorescent fictures, receptacies, switches, A.C. and mise, power       Addressable niom systems, immer and phase writing, and energency lighting     Emergency generator, 7.5 kW, uninterruptible power supply       ICS       N/A     N/A       N/A     N/A       N/A     N/A	Booh S.F. Floor S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 1.48 6.67 .23	3.16 41 56 	9.0% 1.2% 12.2 % 3.2% 17.8%
010 020 040 040 040 050 050 050 050 05	berona a una berona a b	N/A     Totlar and service flatness, supply and drainage     1 Facture/1320 S.F. Flaor       Gas find water heater     Red drains       N/A     N/A       Wet pipe sprinklar system     Standaptes and hase systems       1000 anpere service, panel board and feeders     High efficiency flowersent fictures, receptacies, switches, A.C. and misc, power       Addiesable alorn systems, instruct and phase writing, and energency lighting     Emergency generator, 7.5 kW, uninterruptible power supply       IOS     N/A       N/A     N/A       N/A     N/A	Booh S.F. Floor S.F. Roof S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 11.48 6.67 .23	3.16 41 56 	9.0% 1.2% 12.2 % 3.2% 17.8%
1010 1020	Declaras & Unis Exercitors & Moving Wells Declaras & Moving Wells Danetic Water Distribution Rain Water Distribution Rain Water Distribution Rain Water Distribution Rain Water Distribution D30 HWAC Energy Supply Host Gerarating Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Terminal & Pockage Units Cher HWAC Sys. & Equipment D40 Fire Protection Sprinklars Standolpes D50 Electrical Electrical Service/Distribution Lighting & Branch Wilnig Commencial Equipment Intifutional Equipment Intifutional Equipment Other Equipment Other Equipment Other Equipment Other Equipment Other Equipment	N/A     Totlar and service flatness, supply and drainage     1 Facture/1320 S.F. Flaor       Gas find water heater     Red drains       N/A     N/A	Boch S.F. Floor S.F. Roof S.F. Roor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor S.F. Floor	4171 .41 1.60 - 1570 - 3.33 .81 11.48 8.67 .23	3.16 41 .56 	9.0% 1.2% 12.2 % 3.2% 17.8%
010 020 010 020 040 020 020 030 050 020 010 020 010 020 010 020 010 020 02	beronas & Uns beronas & Moving Wells <b>Dorototos &amp; Moving Wells</b> <b>Dorototos &amp; Moving Wells</b> <b>Dorototos &amp; Moving Wells</b> <b>Dorototos</b> <b>Daro Hvac</b> Eargy Supply Hoor Gerearding Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems <b>Darototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototos</b> <b>Drototo</b>	N/A     Totlar and service flatness, supply and drainage     1 Reduce/1320 S.E. Flaor       Gas find water heater     Red drains       N/A     N/A	Boch S.F. Floor S.F. Roof 	4171 .41 1.60 - 1570 - 3.33 .81 11.48 6.67 .23 - - - - - - - - - - - - - - - - - - -	3.16 .41 .56 - - 15.70 - 3.33 .81 1.48 6.67 .23	9.0% 1.2% 12.2 % 3.2% 17.8% 0.0 %
1010 1020	Declaras & Utilis Exercitors & Moving Wells Dorators & Moving Wells Dorators & Moving Wells Doratic Water Distribution Rain Water Distribution Rain Water Distribution Exercise Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Terminal & Package Units Other HWC Sys. & Equipment PAO Fire Protection Sprinklars Standolpes DSO Electrical Electrical Service/Distribution Lighting & Branch Wining Communications & Security Other Electrical Systems DUIPMENT & FURNISHIN Commercial Equipment Whitola: Equipment Whitola: Equipment Other Equipment Other Equipment Other Equipment Other Equipment Other Equipment Discool Facilities DUIDING SITEWORK	N/A     Tollar and service flatmes, supply and drainage     I Reture/3320 S.E. Floor       Tollar and service flatmes, supply and drainage     I Reture/3320 S.E. Floor       Gas find water heater     Red drains       N/A     Included in D2050       N/A     Multicone using as hearing, alectric cooling       N/A     Wet pips sprinklar system       3000 anpare service, panel board and feeders       High efficiency fluorescent fictures, receptable, power Addressoft and phone writing, and energency lighting       Emergency generator, 7.5 kW, uninterruptible power supply       IOS       N/A       N/A       N/A       N/A       N/A	Each S.F. Floor S.F. Roor S.F. Floor S.F. Floor	4171 417 1.60 - 1570 - 3.33 .81 4.49 11.48 8.67 .23 - - - - - - - - - - - - -	3.16 .41 .56 - - 15.70 - 3.33 .81 14.48 6.67 .23	9.0% 1.2% 12.2 % 3.2% 17.8% 0.0 %
010 020 010 020 010 020 030 050 050 050 050 050 050 020 010 020 010 020 010 020 010 020 050 050 050 050 050 050 05	Declars & Uts Exercitors & Moving Wells Dorates & Moving Wells Dorates & Moving Wells Dorate Water Distribution Rain Water Distribution Rain Water Distribution Exercise Systems Cooling Generating Systems Cooling Generating Systems Cooling Generating Systems Conting Concerning Systems Control & Pockage Units Cher HWC Sys. & Equipment D40 Fire Protection Sprinklers Standcipes D50 Electrical Electrical Service/Distribution Lighting & Branch Wring Commencial Equipment White Equipment D40F Equipment White Equi	N/A     Tollar and service flatmes, supply and drainage     I Subure/3320 S.F. Floor       Tollar and service flatmes, supply and drainage     I Subure/3320 S.F. Floor       Gas find water heater     Roof drains       N/A     Included in D2050       N/A     Multicone using as hearing, electric cooling       N/A     Wet pipe sprinklar system       1000 anpare service, panel board and feeders       High efficiency fluorescent fictures, incorptolas, switches, A.C. and misc, power       Addressolie clarm systems, immore and phase wring, and energency lighting       Emergency generator, 7.5 kW, uninterruptible power supply       IOS       N/A       N/A       N/A       N/A       N/A	Each S.F. Floor S.F. Roof S.F. Floor S.F. Floor	4171 411 1.60 - 1570 - 3.33 .81 1.49 11.48 6.67 .23 - - - - - - - - - - - - - - - - - - -	3.16 _41 _56 _ 15.70 _ 3.33 _81 _ 4.49 11.48 6.67 _23 _ _ _ _ _	9.0% 3.2% 3.2% 3.2% 17.8% 0.0%
010 1020 1	Contract of the second	N/A     Tollar and service flatmes, supply and drainage     / Reture/3320 S.E. Floor       Tollar and service flatmes, supply and drainage     / Reture/3320 S.E. Floor       Gas find water heater     Red drains       N/A     Included in D2050       N/A     Multicone using as hearing, alectric cooling       N/A     Wet pips sprinklar system       3000 anpare service, panel board and feeders       High efficiency floorescent fictures, receptable, power address       High efficiency generator, 7.5 kW, uninterruptible power supply       IOS       N/A       N/A </td <td>Each S.F. Floor S.F. Roor S.F. Rhor S.F. Floor S.F. State S.F. Sta</td> <td>4171 4171 41 1.60 - 1570 - 1570 - 3.33 .81 4.49 11.48 6.67 .23 - - - - - - - - - - - - -</td> <td>3.16 .41 .56 - 15.70 - 3.33 .81 14.48 6.67 .23 - - - - - - - - - - - - - - - - - - -</td> <td>9.0% 1.2% 12.2 % 3.2% 17.8% 0.0 % 0.0 % 100%</td>	Each S.F. Floor S.F. Roor S.F. Rhor S.F. Floor S.F. State S.F. Sta	4171 4171 41 1.60 - 1570 - 1570 - 3.33 .81 4.49 11.48 6.67 .23 - - - - - - - - - - - - -	3.16 .41 .56 - 15.70 - 3.33 .81 14.48 6.67 .23 - - - - - - - - - - - - - - - - - - -	9.0% 1.2% 12.2 % 3.2% 17.8% 0.0 % 0.0 % 100%

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	- and the second second			T	A DA	in the second	the second	and a		
	the second	1	1-20-		-	and provide the local	and the second	-	and the second second	
Costs per square for	ot of floor are	d						1000		
	S.F. Area	5000	8000	12000	16000	20000	35000	50000	65000	800
Exterior Wall	LE Perimeter	220	260	310	330	360	440	490	548	58
	Jahred John	224.75	204.20	39 991	174.76	170.40	1 57 75	151.60	149.40	146
Face Brick with Concrete	wood joists	230/3	200.30	100.03	1/0/3	170.40	10/2/0	191.00	146.00	140
Block back-up	Steel Joists	238.45	208.00	190.55	178.45	172.10	159.45	153.30	150.25	147.
Glass and Metal	Steel Frame	280.45	240.35	217.30	200,80	192.20	175.00	166.55	162.30	158
Cartain Wall	R/Conc. Frame	277.70	238.05	215-25	198.95	190.45	173.40	165.00	160.80	157.
Wood Siding	Wood Frame	190.40	168.40	155.80	147.55	143.15	134.50	130.35	128.35	126
Brick Vanaer	Wood Frame	210.80	183.45	167.80	157.10	151.50	140.30	134.95	132.25	130
Parimaker Arti Articl or Darlact	Per 1001 F	16.15	22.70	15.20	11.35	9.05	5.20	3.70	2.75	2
Sheeklet Adl, Add - Deduct	16 100 LL	50.00	1.10	0.00	0.00	0.45	1.70	1.95	1.10	
abry rigt. Adj., Add or Deduct	Her I H.	5.90	4.40	3.50	2.80	2.45	1.70	1.35	1.10	0.
	for Bo	sement, acid \$	33.80 per so	puare foot of b	casement crea	1				
The abave costs were calculated using the b	osis energilizations shown on th	a facina cons	These cash	should be ash	ustad ukara a	anner for				
design alternatives and owner's requirement	s. Reported completed project	costs, for this ly	pe of shuch	e, range from	\$ 66.55 10 \$	257.85 per	S.F.			
Common additives										
common adamves										
Description	Unit	\$ Cost		Description					Unit	\$ Cor
Clock System				Smoke Detec	tions					
20 room	Each	16,000		Ceiling	ype				Each	233
50 room	Each	39,100		Duct typ	0				Each	525
Closed Circuit Surveillance, One station				Sound Syster	n ore					
Comerc and manifor	Each	1875		Ampite	r, 250 wotts				Each	2400
Narton Book Pase day award	boch	1025		cibecker,	, cering or we				Each	190
30" x 20"	Each	605		TV Artenno	Master system	12 getet			Outlet	320
36" x 48"	Each	1325		30 outle	1				Outlet	207
Aluminum, 24" x 18"	Each	585		100 out	et				Outlet	199
36" x 24"	Each	685								
48" x 32"	Each	975								
48" X OU"	Each	2025								
using a subsection of the second and the second	East	60.000								
CLUE CONSIDER	Each	64,300								
2500# capacity	East	67,600								
2500# capacity 3500# capacity	0001									
1500# capacity 2500# capacity 3500# capacity Additional stop, add	Each	8250								
2500# capacity 2500# capacity 3500# capacity Additional stop, add imergency lighting, 2.5 watt, battery operate	Each d	8250								
1500€ capacity 2500€ capacity 3500€ capacity Additional stop, add imergency lighting, 25 watt, battery operate Lead bottery	d Boch	8250 287								

ACKPT LAKOTA CONTD         CONTO         1	STATE/ZIP	CITY	Residential	Commercial	STATE/ZIP	CITY	Residential	Commerci
Sec         Continuent         7.4         82         19121         Philodiphin         1.11         1.11         1.11           Sec         Watch         7.4         83         94         191         Weitcherin         1.11         1.11         1.11           Sec         Watch         7.4         83         94         191         Weitcherin         1.11         1.11           Sec         Control         Sec	NORTH DAKOTA	CONTD			PENNISYLVANIA (C	ONT'D)		2.000
BJ2         Mind         75         85         133         Windletser         1-12 <th< td=""><td>586</td><td>Dickinson</td><td>.74</td><td>.82</td><td>190-191</td><td>Philadelphia</td><td>1.17</td><td>1.15</td></th<>	586	Dickinson	.74	.82	190-191	Philadelphia	1.17	1.15
985         Million         J <sup>A</sup> 4.2         155-156         Reading         1.98         1.00           480-432         Odentou         3.94         9.4         9.4         9.4         9.4         9.4         9.4         9.4         9.4         9.4         9.4         9.4         9.5         3.5 <td>587</td> <td>Minot</td> <td>.79</td> <td>.85</td> <td>193</td> <td>Westchester</td> <td>1.12</td> <td>1.12</td>	587	Minot	.79	.85	193	Westchester	1.12	1.12
OP0 Bis 202 Bis 202 Bis 204 Bis	288	Williston	.74	10.	195-196	Reading	86.	1.00
433         Marce         38         88         0009         San Jam         73         73           433         Gamedrine         33         33         33         Gamedrine         1.08         1.08         1.08           434         Carbonine         33         33         34         Gamedrine         1.08	0HI0 430.432	Columbus	.94	.94	PUERTO RICO			1.000
Sat.289 (43)         Jowe December (44)         Jowe (10)         Jowe (10) <td>433</td> <td>Marion</td> <td>.88</td> <td>.88</td> <td>009</td> <td>San Juan</td> <td>.73</td> <td>.79</td>	433	Marion	.88	.88	009	San Juan	.73	.79
439         C28         Mexacr.         1.65         1.93           440         Carth         350         39         C28         Mexacr.         1.65         1.93           440         Carth         350         39         C27         Productica         1.65         1.93           440         Carth         36         56         SOUTH CABOLINA         Cathribin         52         7.8           442.443         Contraction         34         50         224         Subatration         55         7.8           453.452         Cantrolin         31         51         226         Reservice         7.8         7.8           453.454         Daylon         50         200         Reservice         85         7.8           457         Athene         38         88         SOUTH DAKOTA         80         7.7         8.8           457         Athene         38         80         SOUTH DAKOTA         7.7         8.8         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7         7.7 <td>430-430</td> <td>Zanesville</td> <td>.99</td> <td>.88</td> <td>RHODE ISLAND</td> <td></td> <td></td> <td>1.000</td>	430-430	Zanesville	.99	.88	RHODE ISLAND			1.000
440         Loran         3.50         1.50         COP         PROMING         1.50         Lor           442443         Youngtown         3.44         54         280.352         Stattacours         82         72           444445         Youngtown         3.41         50         202.352         Stattacours         82         32           446447         Youngtown         3.91         20         56         Generalie         6.81         77           445447         Dayron         3.92         50         229         Mathem         81         77           453454         Dayron         3.92         50         229         Mathem         81         77           453         Atheman         38         38         88         50         777         78         77         78         77         79         77         77         78         77         78         77         79         77 <td< td=""><td>439</td><td>Steuberwile</td><td>.93</td><td>.93</td><td>028</td><td>Newport</td><td>30.0</td><td>1.05</td></td<>	439	Steuberwile	.93	.93	028	Newport	30.0	1.05
12-4-43 424-43         Profin	440	Lorain	100	90	029	Provoence	1700	1.50
444.45         Young Status         94         95         225         96         Reaction         84	442-443	Akron	.96	.96	SOUTH CAROLINA			70
attacké 4800         attacké 1990         attacké 292         attacké	444-445	Youngstown	.94	.94	290-292	Columbia	82	.76
450         Hamilton         91         90         225         Florence         78         73           453/454         Dartmal         91         23         90         226         Reaking         65         74           4556         Extra for         32         30         228         Reaking         65         74           457         Millen         38         30         228         Reaking         67         74           457         Millen         38         30         90         Sour fold         77         84           458         Imma         39         90         Sour fold         74         73           730         Mattrone         77         20         573         Mattrole         74         73           733         Mattrole         75         20         575         Port         74         74           734         Laware         75         20         575         Port         74         74           735         Data         275         20         277         74         74         75           736         Data         75         75         75         75	440-447	Mansfield	.92	92	294	Charleston	.85	.81
451452         Christian         30         30         20         20         Sectimal         40         171           453         Control         30         23         30         28         Beakert         80         30         289         Beakert         80         30           457         Materia         38         30         299         Beakert         80         30           458         Linna         39         30         50         571         Waterian         77         30           700730         Materian         30         52         575         Perr         78         77         77         70         57         Rept Caterian         74         74         77 <td>450</td> <td>Hamilton</td> <td>.91</td> <td>.90</td> <td>295</td> <td>Florence</td> <td>.78</td> <td>.76</td>	450	Hamilton	.91	.90	295	Florence	.78	.76
105 million         107 million	451-452	Cincinnati	.91	.91 90	296	Rock Hill	80	.75
eise         Childhöre         48         91         299         Restrict         80         1.4           457         Linna         39         30         500         500.671         Waterban         71         88           458         Linna         39         30         500         500.671         Waterban         74         73         73         73         73         Waterban         74         73         73         73         74         Waterban         75         75         75         74         Aberoton         75         75         75         75         77         80         74         75         75         77         80         74         75         75         77         80         74         75         75         77         80         74         75         75         77         80         74         75         75         77         80         74         74         74         74         74         75         75         77         73         75         73         75         73         73         75         73         73         75         73         73         75         73         73         73 <t< td=""><td>455</td><td>Springfield</td><td>.92</td><td>.90</td><td>298</td><td>Aiken</td><td>.99</td><td>.86</td></t<>	455	Springfield	.92	.90	298	Aiken	.99	.86
420         Political Limm         100         500         500/F00400000         71         81           7320731         Arditrone         77         80         572         Waterbann         74         73           7347         Arditrone         77         80         573         Matchell         75         87           735         Lawton         76         80         573         Matchell         75         87           735         Union         76         80         577         Redd Cy         76         87           736         Union         76         80         577         Redd Cy         76         87           738         Woodward         75         70         77         70         37         70         77         70         77         70         70         77         70         70         77         70         70         77	456	Chilicothe	.94	.91	299	Beaufort	SC	.74
ORLANDAR         STACTION         Stort Table         JJ         Start           730131         Oblehom Dry         78         S2         573         Mitchell         75         JJ           734         Ardinore         77         S0         575         Mitchell         75         JJ           735         Lawtin         JS         S0         575         Moreign         78         TJ           738         Lawtin         JS         S0         575         Moreign         78         TJ           738         Wookend         75         JD         THONESSEE         JJ         JJ         78           740741         Table         -76         79         JJ         JJ         JJ         JJ         77           743         Marria         JD         JD         JJ         JJ <j< td=""><td>457</td><td>Lima</td><td>.89</td><td>.90</td><td>SOUTH DAKOTA</td><td></td><td></td><td></td></j<>	457	Lima	.89	.90	SOUTH DAKOTA			
URLANCION         Dialogn	-		0.00000000		570-571	Sioux Falls	.77	.81
Trial         Triantice         Trial         Trial <thtrial< th="">         Trial         Trial</thtrial<>	730,731	Oklahoma Chu	.78	.82	572	Mitchel	.75	.77
785         Lawton         80         B2         576         Prom         -76         30           736         Ginton         .76         .80         576         Moordige         .74         .80           737         Ginton         .76         .80         577         Moordige         .74         .80           738         Guynon         .66         .07         TRNSSEE         .80         .80           744         Mackagese         .70         .72         .75,280-381         Monpits         .81         .84           744         Mackagese         .70         .76         .79         .37,329         Knonik         .74         .81           745         Mackagese         .70         .76         .79         .333         .426con         .72         .73           740         Durant         .76         .79         .333         .426con         .72         .83           9739         Fotau         .77         .79         .364         .60unik         .70         .73         .75         .79         .333         .426con         .72         .83           9739         Statence         .77         .79         .364	734	Ardmore	.77	.80	574	Aberdeen	.76	.80
240         Drive         -70         201         277         Paged Cy         76         88           738         Woodward         75         30         T         T         Paged Cy         76         98           738         Woodward         75         30         T         T         T         Paged Cy         76         99         373 374         Chathooga         81         86           743         Marris         80         70         72         375 280-331         Mempkins         81         86           745         Mclasterge         70         72         375 280-331         Mempkins         81         86           745         Mclasterge         70         72         377 379         86         Color         76         72         373           740         Durant         75         79         382         Mclastins         71         73         38         Scotes         76         72         38         Scotes         76         88         Scotes         76	735	Lawton	.80	.82	575	Piente Mobridae	.75	.78
738         Worksed         75         80         TENNESSEE         Nativitie         84         84           740,741         Iulia         .76         .79         370,372         Chattanoga         84         84           744         Miarri         .30         .80         373,372         Chattanoga         81         84           744         Miarri         .30         .80         373,372         375,320,331         Miarris         81         84           744         Miarris         .30         .75         .77         375,320,331         Miarris         74         75         75         75         75         75         75         74         74         74         75         74         74         75         74         74         75         74         74         77	730	Enid	.76	.81	577	Rapid City	.76	.80
Age         Byrnon         DO         Interversace         Nativity         Bod         Bit           743         Marria         DD         DD         273 372         Nativity         Bit         Bit           743         Marria         DD         DD         273 372         Nativity         Bit         Bit         Bit           744         Marria         DD         DD         273 373         377 379         Kanonika         74         Bit           748         Dance         75         79         337 379         Kanonika         74         Bit           749         Dance         75         79         383         Jacketon         73         74         Bit           970         Saten         .96         .99         TEXAS         Cookenile         70         38           975         Saten         .96         .98         71         74         Bit         87           976         Naturath Faits         .96         .98         .72         73         Bit         88         .72         74         .74         .75         .75           976         Naturath Faits         .96         .98         .72         .7	738	Woodward	.75	.80	TELEVENCE			
Yat         Matrix         ToO         ToO <thtoo< <="" td=""><td>739</td><td>Guymon</td><td>.65</td><td>.67</td><td>370.372</td><td>Nastville</td><td>.84</td><td>.87</td></thtoo<>	739	Guymon	.65	.67	370.372	Nastville	.84	.87
744         Mackages         70         72         375-380-381         Menthes         41         95           745         Proce CN         75         376         Johnson CN         74         95           746         Proce CN         75         776         Johnson CN         74         95           747         Durat         775         79         382         Mountle         74         95           748         Sheares         75         79         382         Columble         70         38           748         Sheares         77         79         382         Columble         70         38           749         Petsa         -77         79         388         Columble         70         74         76         77         38           797         Petsa         -76         98         98         776         Mackares         76         98         98         774         78         174         Quernile         74         73           977         Berd         .06         .05         726         Longtinn         74         74         74         74         74         74         74         75         <	743	Miami	.80	.80	373-374	Chattanooga	.81	.85
All         Interval         Desc         Desc <thdesc< th=""> <thdesc< th="">         Desc         <t< td=""><td>744</td><td>Muskogee</td><td>.70</td><td>.72</td><td>375,380-381</td><td>Memphis Johnson City</td><td>.70</td><td>.79</td></t<></thdesc<></thdesc<>	744	Muskogee	.70	.72	375,380-381	Memphis Johnson City	.70	.79
747         Darant         76         79         382         Mckente         71         73           748         Stawtee         75         79         383         Jocken         73         36           749         Petkau         .77         .79         384         Columbia         72         38           0FEGON         97         Saleen         .96         98         750         Mckrney         .74         37           970-972         Saleen         .96         98         750         Mckrney         .74         .76           975         Meditrd         .96         .98         .751         Mckrney         .74         .77           977         Berd         .98         .98         .754         .00         .76         .79           977         Berd         .98         .98         .754         .00         .76         .77         .74         .77           977         Berd         .98         .98         .755         .78         .76         .77         .76         .77         .76         .77         .76         .77         .76         .77         .76         .77         .77         .77	745	Ponca City	.76	.79	377-379	Knowile	.74	.80
748         Stantie         .72         .79         253         South and an and an and an and and and and an	747	Durant	.76	.79	382	Mckenzie	.71	.78
OREGON         Sale         Jack         Jack <thjack< th="">         Jack         Jack         <t< td=""><td>748</td><td>Poteau</td><td>.75</td><td>.79</td><td>384</td><td>Columbia</td><td>.72</td><td>.81</td></t<></thjack<>	748	Poteau	.75	.79	384	Columbia	.72	.81
Direction         Portland         98         96         TEXAS         Page         Page           972         Salem	000000				385	Cookevile	.70	.81
973         Salem         96         96         760         Mckirney         744         746         786           975         Meditard         975         588         752.783         Dalas         831         38           975         Meanth Falls         965         968         752.783         Dalas         831         38           977         Bernd         96         96         975         Toankana         74         76           977         Bernd         96         96         975         Toankana         74         77           978         Wee         94         90         757         Toler         75         87           978         Wee         94         90         757         Toler         75         87           978         Wee         94         90         762         Deaton         72         74           150152         Pittsburgh         98         1.00         762         Weinh         82         83           153         Washington         92         97         763         Weinh         82         88           154         Untontown         92         97 <td< td=""><td>970-972</td><td>Portland</td><td>.98</td><td>.99</td><td>TEXAS</td><td></td><td></td><td></td></td<>	970-972	Portland	.98	.99	TEXAS			
974         Liggner         975         Media         975         Weak instance         14         976           975         Mendind         955         98         754         Greenvile         70         77           976         Klamsth Falls         955         98         754         Greenvile         70         77           977         Berof d         98         98         765         Toaskan         74         78           978         Pendieton         .06         .95         766         Longview         .69         .75         .76         .76         .76         .76         .76         .76         .77         .76         .76         .77         .76         .77         .76         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77 <td>973</td> <td>Salem</td> <td>.96</td> <td>.98</td> <td>750</td> <td>Mckinney</td> <td>.74</td> <td>.78</td>	973	Salem	.96	.98	750	Mckinney	.74	.78
975         Hansah Falk         98         96         76         Greenvile         J0         J2           977         Berd         .98         .98         .98         765         Longxinw         .64         .78           978         Berderten         .96         .98         .785         Longxinw         .66         .78           979         Vale         .94         .90         .787         .74         .74         .74           979         Vale         .94         .90         .787         .747         .74         .74           979         Vale         .94         .90         .767         .747         .74         .74           979         Vale         .94         .90         .100         .760         .767         .74         .74           971         Jakington         .92         .97         .763         Walth Fails         .78         .78           1531         Unionovn         .92         .97         .766         .76         .78         .76           155         Bedord         .92         .97         .766         .70         .78         .76           155         Unios         .9	974	Eugene	.97	.96	752-753	Dalas		.85
977         Bend         -98         98         795         leasthan         -74         -75           979         Vale         -94         90         757         Tyler         .75         .88           979         Vale         .94         .90         758         Palestine         .668         .71           979         Vale         .94         .90         .758         Palestine         .668         .71           979         Vale         .92         .97         .763         Valestine         .688         .71           1501         Linomown         .92         .97         .763         Wichte Falls         .78         .88           155         Bedford         .98         .94         .762         Denton         .75         .76           156         Greensburg         .95         .98         .765         Waco         .78         .86           157         Indiana         .92         .97         .766.76.7         Waco         .78         .80           158         Dubois         .90         .95         .769         San Angelo         .72         .77           159         Joinstown         .90	976	Klamath Falls	.96	.98	754	Greenville	.70	.73
979         Keite         94         20         257         Tite"         76         98           PENNSYLVANIA         758         Palestine         6.8         77           150152         Hitsburgh         98         1.00         760.761         Fort Worth         8.2         88           153         Washington         95         98         762         Denton         .75         .77           154         Unomown         92         97         763         Wichit Falls         .78         .86           155         Bectord         .88         .94         766         Tomple         .75         .77           156         Greensburg         .95         .98         .766         Tomple         .75         .77           157         Indiana         .92         .97         766.767         Waco        78         .80           158         Dubris         .90         .95         .769         .5an Angeto         .72         .76           160         Dubris         .94         .96         .70.72         Houston         .85         .83           161         New Castle         .93         .95         .773	977	Bend	.98	.98	755	lexarkana Longview	69	.73
PENNSYLVANIA         758         Paison         6.8         74           150-152         Pitsbargh         .98         1.00         760-751         Fert Worth         .82         .83           153         Washington         .95         .98         .00         762         Denton         .78         .78         .82           153         Witchitz Fails         .72         .74         .78         .78         .82         .83           155         Bedford         .88         .94         .764         Eastand         .72         .77         .78         .88         .71         .77         .77         .78         .88         .71         .77         .77         .77         .77         .77         .78         .78         .88         .71           157         Irdiana         .92         .97         .766.76         Waco         .78         .88         .71           158         Dubcits         .90         .95         .769         .53         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77         .77 </td <td>979</td> <td>Vale</td> <td>.94</td> <td>.90</td> <td>757</td> <td>Tyler</td> <td>.76</td> <td>.80</td>	979	Vale	.94	.90	757	Tyler	.76	.80
Price by New Prizon         98         1.00         760 761         Fort Worth         82         83           153         Washington         .95         .98         762         Denton         .75         .78         .78           154         Unfortiown         .92         .97         763         Wichita Falls         .78         .78           156         Becford         .88         .94         .764         Eastland         .72         .77           156         Greensburg         .95         .98         .766         Tomple         .78         .88           157         Inciana         .92         .97         .766.767         Wacco         .78         .88           158         Dubois         .90         .95         .769         .5an Angelo         .72         .77           160         Butler         .94         .95         .773         Hauston         .85         .83           161         New Castle         .93         .95         .773         Hauston         .85         .83           162         Wittmining         .95         .97         .774         Waston         .82         .83           163         Oli C	DENNISYI VANIA				758	Palestine	.72	.74
153         Washington         .95         .98         .762         Denton         .75        78	150-152	Pittsburgh	.98	1.00	760-761	Fort Worth	.82	.83
134         Unionovin         34         391         763         unitation         762         763           156         Beersburg         355         58         764         Eastand         72         72           156         Greensburg         355         58         765         Temple         72         72           157         Indian         92         97         76677         Wacoo         78         38           158         Dubois         -90         -96         768         Brownwood         68         77           159         Johnstown         -90         -95         769         San Angelo         72         77           160         Duber         -94         -96         770-772         Houston         85         88           161         New Castle         -93         -95         773         Huntsvile         68         72         77           162         Wittmining         -95         97         774         Werton         70         72         73           164         165         Eric         -93         94         775         Galweston         83         98           164	153	Washington	.95	.98	762	Denton Wichite Falls	.76	.75
156         Greensburg         .95         .98         .265         Tomple         .78         .78           157         Iroliana         .92         .97         .766.767         Waco         .78         .88           158         Dubois         .90         .95         .768         Brownwood         .66         .748         .77           159         Johnstown         .90         .95         .769         .5an Angelo         .72         .77           150         Dubris         .93         .95         .73         Hautsvilo         .66         .77           161         New Castle         .93         .95         .773         Hautsvilo         .66         .77           162         Witzming         .95         .97         .774         Wardon         .70         .75           163         Oil Chy         .90         .94         .775         Galveston         .83         .83           164         165         Eric         .93         .94         .776         Beaumont         .83         .83           166         Altonia         .88         .93         .778         Boyon         .74         .83           167 <td>154</td> <td>Bectord</td> <td>.92</td> <td>.91</td> <td>764</td> <td>Eastland</td> <td>.72</td> <td>.72</td>	154	Bectord	.92	.91	764	Eastland	.72	.72
157         Indiana         32         37         765 / 768         Brownwood         66         77           158         Dubois         -90         -95         768         Brownwood         66         77           159         Johnstown         -90         -95         769         San Angelo         72         .77           160         Butlier         -93         -95         773         Houston         .85         .88           161         Nier Castle         -93         .95         773         Huntsvilie         .66         .77           162         Kittanning         .95         .97         774         Wherion         .70         .77           163         Oil Chy         .90         .94         .775         Gauwston         .81         .85           164         .166         Atoona         .88         .93         .778         Boyon         .74         .83           167         Bradford         .90         .95         .719         Victoria         .72         .77           168         State College         .91         .93         .80         Larodo         .72         .77           169         Weths	156	Greensburg	.95	.98	765	Temple	.76	.75
Loc         Dotation         -90         -95         769         San Angeto         722         77           160         Buller         .94         .96         770.772         Houston         .85         .88           161         New Castle         .93         .95         .77         Huntsville         .66         .77           162         Wittaning         .95         .97         .77.4         Wherlon         .70         .77           163         Oil Chy         .90         .94         .775         Galweston         .85         .88           166         Altona         .98         .93         .778         Boyon         .74         .88           166         Altona         .98         .93         .778         Boyon         .74         .83           166         Altona         .92         .95         .779         Victoria         .72         .77           163         State Collegie         .91         .93         .780         Lanoto         .72         .78           166         Wetshoro         .322         .95         .780         Lanoto         .72         .78           172         Chambersbung         <	157	Dubois	.92	.97	766767	Brownwood	.76	.72
160         Buller         94         96         770-722         Houston         85         98           161         New Castle         93         95         773         Hutsville         66         77           162         Wittaning         .95         .97         774         Wherton         .70         .71           163         Oil Chy         .90         .94         .775         Galveston         .83         .85           164         .96         .97         .774         Wherton         .70         .77           163         Oil Chy         .90         .94         .775         Galveston         .83         .83           166         Atoona         .88         .93         .778         Boyon         .74         .83           166         Matorid         .90         .95         .97         .78.2         San Antorio         .72         .77           163         State Collegie         .91         .93         .780         Lawoo         .72         .77           169         Wetshoro         .322         .95         .97         .78.3784         Corpus Christi         .71         .75           170-171 <t< td=""><td>159</td><td>Johnstown</td><td>.90</td><td>.95</td><td>769</td><td>San Angelo</td><td>.72</td><td>.76</td></t<>	159	Johnstown	.90	.95	769	San Angelo	.72	.76
Init         Intervention         35         35         175         Intervention         370         171           162         Wittming	160	Butler None Contin	.94	.96	770-772	Houston	.85 68	.8/
163         Oil City         .90         .94         775         Galveston         .82         .98           164-165         Eric         .933         .94         776         Galveston         .82         .98           166         Altoora         .98         .93         .778         Beaunont         .82         .83           167         Bractord         .90         .95         .779         Victoria         .71         .73           168         State Calege         .91         .93         .780         Laraco         .74         .83           167         Welsboro         .92         .95         .779         Victoria         .71         .77           168         Welsboro         .92         .95         .97         .78.784         Corpus Cirusti         .71         .77           170-171         Hartsburg         .95         .97         .78.784         Corpus Cirusti         .71         .78           172         Charmoersburg         .89         .93         .85         .96         .96         .96         .78         .96         .97         .78         .98         .96         .77         .78         .93         .96         .90 </td <td>162</td> <td>Kittanning</td> <td>.95</td> <td>.97</td> <td>774</td> <td>Wharton</td> <td>.70</td> <td>.75</td>	162	Kittanning	.95	.97	774	Wharton	.70	.75
164-165         Erie	163	Oil City	.90	.94	775	Galveston	81	.85
100         HUDDs         200         310         170         Victoria         72         77           167         Bradford         .90         .95         .780         Lando         .72         .77           168         State College         .91         .93         .780         Lando         .72         .77           168         State College         .91         .93         .780         Lando         .72         .77           168         Wetshoro         .32         .95         .781         .782         San Antonio         .78         .88           170-171         Harrisburg         .95         .97         .783.784         Corpus Christi         .71         .77           172         Chambersburg         .89         .93         .785         McAlene         .75         .76           172         Chambersburg         .89         .93         .96         .786.787         Auctin         .78         .80           177         Wilkensport         .85         .88         .789         .90.791         Amanilo         .76         .32           178         Surbury         .93         .95         .790.791         Amanillo         .76	164-165	Erie	.93	.94	776-777	Beaumont	74	.82
168         State College         .91         .93         780         Laroco         772         .771           169         Wetsboro         .92         .95         .781.782         San Antonio         .78         .83           169         Wetsboro         .92         .95         .97         .783.784         Corpus Christi         .71         .78         .83           172         Chambersbung         .89         .93         .785         Mc Alen         .75         .78         .78           172         Chambersbung         .89         .93         .96         .786.787         .4uctin         .78         .88           175.176         Lancastate         .92         .92         .786         Del Rio         .66         .66           177         Willamsport         .85         .88         .789         Gickings         .66         .71         .77           178         Surbury         .93         .95         .790.791         .4mmlb         .75         .32           179         Pottsvile         .93         .96         .792         .71         .76         .32           181         Alaribown         .1.05         .1.04         .795.79	167	Bradford	.90	.95	779	Victoria	.75	.75
Ice         Wetstoro         32         35         781-782         Sail Allored         72         0.01           I70-171         Harriburg         95         97         783-784         Corpus Christi         71         77           172         Chambersburg         .89         .93         785         Mc Alen         .75         .77           172         Chambersburg         .89         .93         785         Mc Alen         .75         .77           1751         T6         Lancastate         .92         .92         788         Del No         .66         .66           177         Willamsport         .85         .88         789         Gickings         .65         .71         .78           178         Surbury         .93         .95         .790-791         .4mmilb         .79         .32         .36         .71         .78         .38           179         Pottswile         .93         .95         .790-791         .4mmilb         .79         .32           179         Pottswile         .93         .96         .792         .0tidress         .71         .78           181         Allantown         1.04         .795-796	168	State College	.91	-93	780	Larodo San Antonio	.72	.76
172         Chambersburg	170-171	Wellsboro	.92	95	781-782	Corpus Christi	.77	.78
173-174         York         33         96         285-787         Auctin         78         28           175-176         Lancistate         32         92         78         Del Ro         66         66         66         66         66         66         66         66         66         66         66         66         66         66         66         66         66         66         78         78         0         61ckings         65         71         71         78         28         789         61ckings         65         71         72         74         74         74         74         75         33         76         72         75         74         75         76         32         76         79         75         74         76 <td< td=""><td>172</td><td>Chambersburg</td><td>.89</td><td>.93</td><td>785</td><td>Mc Allen</td><td>.75</td><td>.75</td></td<>	172	Chambersburg	.89	.93	785	Mc Allen	.75	.75
177         Willinsport         345         346         760         Detword         365         771           178         Surbury         .93         .95         790.791         Amarilio         .75         .88           179         Pottsvile         .93         .95         790.791         Amarilio         .75         .88           179         Pottsvile         .93         .96         .702         Childress         .71         .78           180         Lehigh Valley         .104         1.04         .793.794         Lubbock         .76         .88           181         Algendward         .105         1.04         .795.796         Abiene         .71         .78           182         Hazteion         .93         .96         .797         .04tanit         .76         .76           182         Hazteion         .93         .96         .797         .04tanit         .76         .76           183         Stroudsburg         .93         1.00         .799.5855         El Paso         .75         .76           184-185         Scrawton         .96         1.00         .76         .76         .76	173-174	York	.93	.96	785-787	Del Rio	.78	.80
178         Surbury         .93         .95         790.791         Amaritic         .75         .83           179         Pothsule         .33         .96         792         Childress         .71         .78           180         Lehigh Valley         1.04         1.04         793.794         Lubbock         .76         .88           181         Alarown         1.05         1.04         795.796         Abiene         .71         .78           182         Hazleton         .33         .96         797         Intelant         .76         .78           182         Hazleton         .33         .96         797         Intelant         .76         .76           183         Stroudsburg         .33         1.00         799.285         El Paso         .75         .76           184-185         Scrawton         .36         1.00         79.79.885         El Paso         .75         .76	177	Williamsport	.85	88	789	Gickings	.69	.71
LC1         Pottswite         353         .9b         792         Critioness         .71         .73           180         Lehigh Valley         1.04         1.04         7.93-794         Lubbock         .76         .88           181         Alarown         1.05         1.04         7.95-796         Ablene         .75         .76         .88           182         Hazteton         .93         .96         7.97         Metand         .76         .76           183         Strondsburg         .93         1.00         7.99.2855         El Paso         .75         .76           184-185         Scrawton         .96         1.00         79.79.885         El Paso         .75         .76	178	Surbury	.93	.95	790-791	Amarillo	76	.82
181         Alanown         1.05         1.04         795-796         Ablene         .7E	1/9	Pottsvile Lehigh Valley	104	1.04	793-794	Lubbock	.76	.78
1B2         Hadeton         5/3         5/6         797         Methand         7/6         7/7           183         Strondsburg         .93         1.00         798.799,885         El Paso         .76         .77           184-185         Scranton         .96         1.00         798.799,885         El Paso         .76         .77	181	Allentown	1.05	1.04	795-796	Abiene	.75	.78
184-185 Scratton 3.86 1.00	182	Hazieton	.93	.96	797	El Paso	75	.78
The second se	184-185	Scranton	.98	1.00	100000000			
186-187 Willigs-Barre	186-187	Wilkes-Barre Montrose	.95	96 96	840841	Salt Lake City	.79	.87
189 Doylestown 1.08 1.07 842,844 Ogdan .71 .8	189	Doylestown	1.08	1.07	842.844	Ogden	.71	.84