

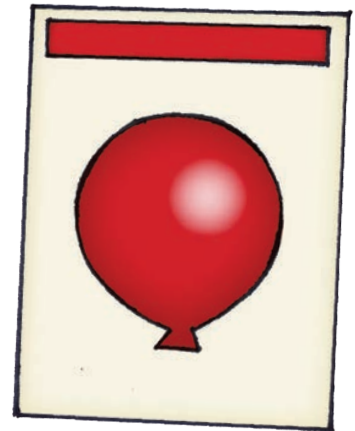
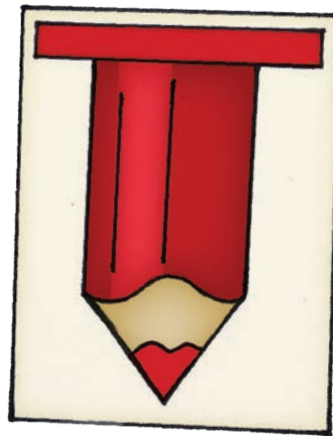
TEXAS SCHOOLS AREN'T

—— **AVERAGE** ——

The Background Story

In the past couple of years, the Texas Comptroller of Public Accounts has published various reports about state and local debt in Texas. A major topic in all of these reports has been public education debt in Texas. The reports have emphasized the following points:

- Public school districts have the largest outstanding share of local government debt in Texas.
- Due to new school construction and technology upgrades, "debt service payments" have been the fastest-rising spending category in Texas during the past decade (2001-2011).



THESE ARE THE FOUR MAJOR SPENDING CATEGORIES FOR PUBLIC SCHOOL DISTRICTS:



Payroll:

salaries, wages and benefits for school district employees



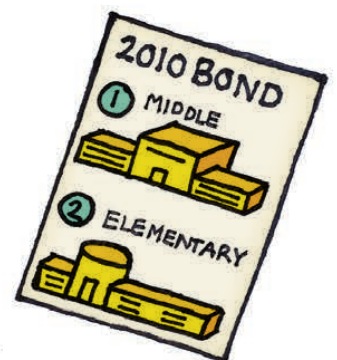
Other Operating Costs:

food services, vehicle fuel, supplies, materials and services



Capital Outlay:

fixed assets such as buildings, land, equipment, furniture, library books, vehicles, etc.



Debt Service:

principal and interest payments on bonds and other debt

Comparing Apples to Oranges

In October 2012, the comptroller published a report titled *Your Money and Education Debt*, which claimed to seek a better understanding of the issues surrounding public education debt.

The data used to frame the report, which was collected by surveying 23 of the 1,024 school districts in Texas, led the comptroller to the following conclusions:

"One item of interest that emerges from these numbers is the wide range of construction costs and space per student. While such variation may be due, in part, to factors such as geographical location and local labor costs; it is also clear that there is little standardization in Texas school construction. Some districts have found that using common prototype designs for buildings can yield considerable savings."

CAUTION:
This is not an insignificant detail you can skim over!

Prototypes do NOT work for everyone. Let the community-elected school boards draw their own conclusions!

Hmmm... aren't Houston and Austin in two different regions of Texas? And isn't the early childhood center in Austin almost TWICE the size of the one in Houston?

The comptroller's report also included "At a Glance" profiles for each type of school in Texas (elementary, middle and high schools), which included the following:

- Average cost per square foot at capacity
- Average cost per student at capacity
- Average square footage per student at capacity

As a follow up to *Your Money and Education Debt* the comptroller went on to release a short, 5-page "Snapshot" document, spotlighting specific construction projects by unfairly comparing them to one another.

As an example, the comptroller compared two seemingly similar early childhood centers that were in two completely distinct school districts.



As this report will prove, this is like comparing apples to oranges!

Upsetting the Apple Cart

In October 2013, the comptroller sent out another request for information to districts across the state. The goal was to collect more data about school construction costs for future reports, similar to the one published in 2012.

This time around, the comptroller requested that districts provide the following information:

- Facility actual construction cost (excluding land, road and parking lots)
- Road improvement actual costs
- Parking lot actual costs

THE OBJECTIVE:

The first objective of this report, *Texas Schools Aren't Average*, is to shed some light on why the cost of a construction project cannot be easily broken up into parts (building vs. land vs. parking lots, etc.) for analysis or comparison. By explaining this crucial point, the report will show that the specific information requested by the comptroller cannot be considered accurate or conclusive data.

The second, and most significant, objective of this report is to explain that, **even if the cost of a building is proven to be 100 percent accurate, it cannot be analyzed without context.**

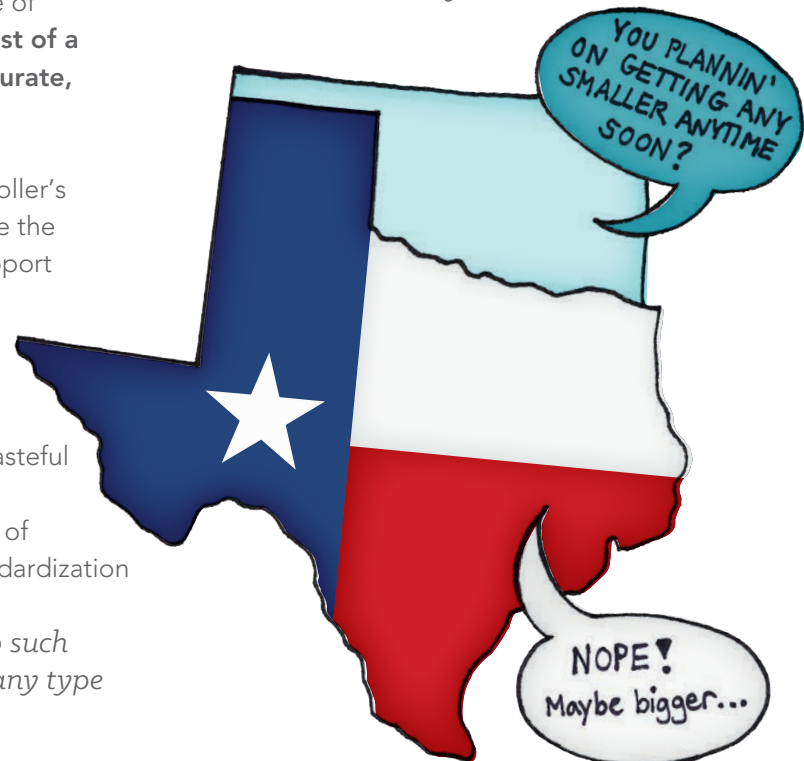
With the acknowledgment that the comptroller's data is not fully-accurate, this report will use the numbers that were collected in 2013 to support the following assertions:

- Debt service payments are, in fact, at an all time high and steadily increasing, but not as a result of wasteful spending by school districts.
- There will always be a "wide range of construction costs" and "little standardization in Texas school construction."
- And, most importantly, *there is no such thing as an "average" cost for any type of school in Texas.*

So, why is acknowledging the context of a construction project so important?

Even though it is complicated, it is really quite simple...

1. *No Two Regions Were Created Equal (In Texas)*
2. *Construction 101: Everything Costs Money*
3. *The Community Rules*



Careful What You Ask For

Obtaining the overall, final cost of a construction project is easy because once a project is complete and a final number is calculated, that number gets passed along from document to document for years to come. The owner of a building will almost always have some form of document that states the total cost of the construction project.

On the other hand, identifying parts of a total construction project cost is a relatively confusing and complicated task. If faced with having to do this, building owners will almost always need to involve the architect, which, as you will see on the following page, unveils a unique set of challenges.

The request for construction cost information that was sent by the comptroller to various districts across the state did enter into the tricky territory of having to extract only parts of total construction cost.

› THE COMPTROLLER'S REQUEST:

"We would like the following information for each new instructional facility completed in your school district from Jan. 1, 2007 to the present:

Campus name	✓
Campus ID	✓
Street address	Got it
City	Easy
ZIP code	Super easy
Starting construction date (month and year only)	This has to be around here somewhere... Day we moved in or day school started?
Facility opening date (month and year only)	Say WHAT?!?
Facility actual construction cost (excluding land, road and parking lots)	CALL THE ARCHITECT ASAP!
Road improvement actual cost	?????
Parking lot actual cost	Where in the world do we find THIS?
Number of square feet in the new instructional facility	Surely we have this...
Student capacity	✓ Thank goodness
Number of students in attendance as of the 2013/2014 school year	EASY! Do we include athletic buildings that were built WITH the main building?

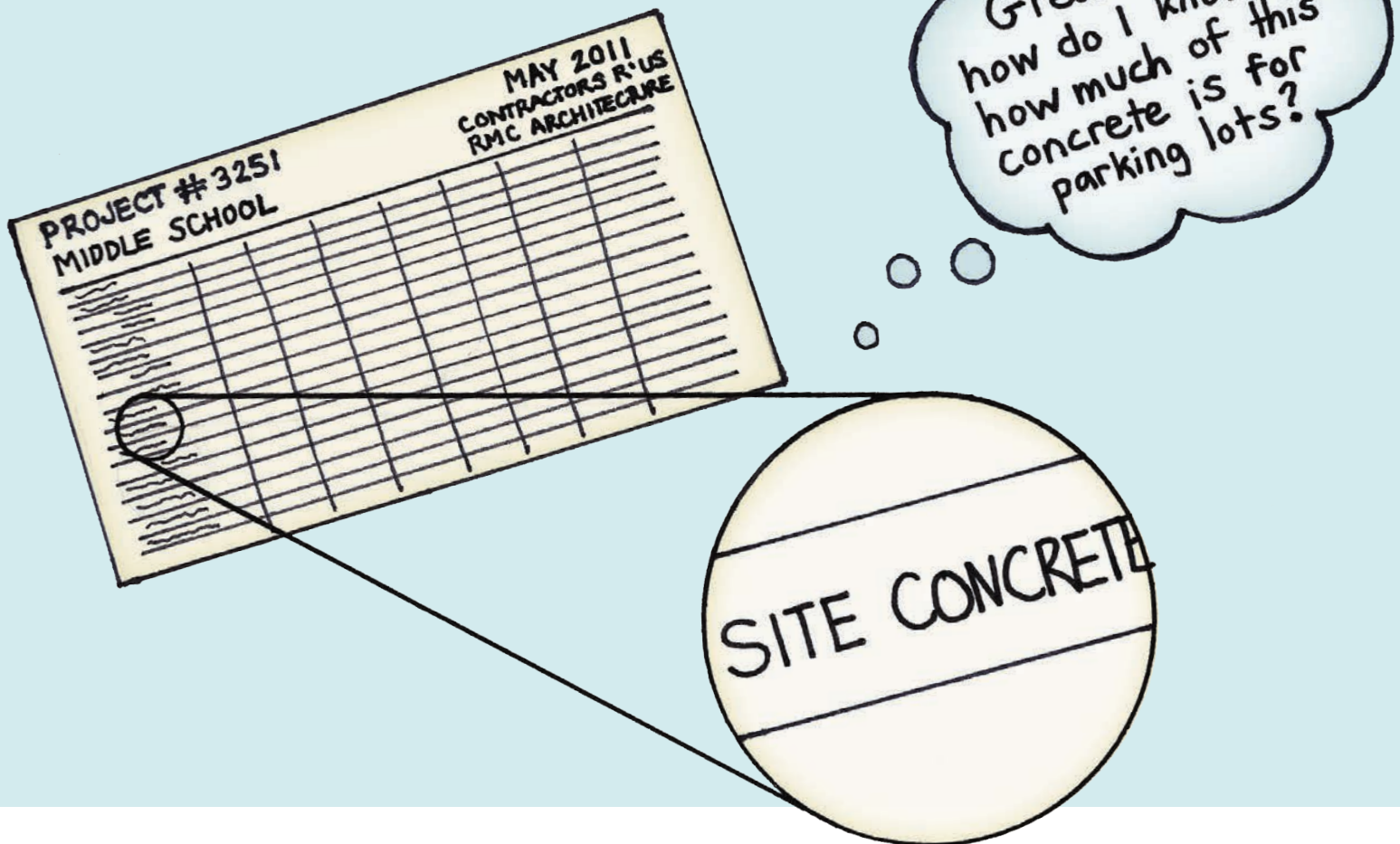
New instructional facilities include any facility built from the ground up – excluding retrofits and add-ons – the primary purpose of which is academic instruction. For example, an athletic building added to an existing campus would not be included."

Untangling the Web of Construction Costs

Think of construction projects as very complex webs of interconnected elements. These elements, which can be materials, parts or services, are very hard to separate because their functional purposes almost always depend on other elements in the web.

The functional interdependencies of these elements are often reflected in how the cost of a project is documented. All elements have their individual cost and therefore, could be their own line item in a cost calculation, but many times, they are lumped together as one major category element.

Unfortunately, this makes it very difficult to break out various elements of cost, say for a parking lot:

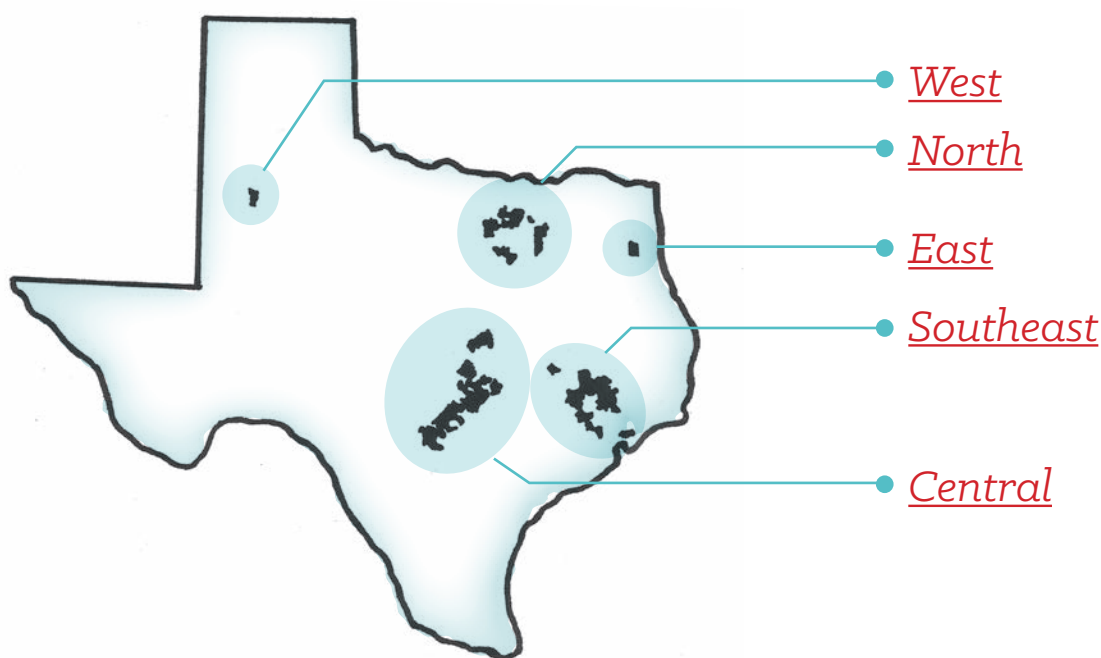


When Life Hands You Data... Learn Something!

The data collection method used by the comptroller lends itself to interpretation and results in inconsistent data. However, the data that was collected can still be used to find patterns and to address the variety of influences on the cost of a building.

This report only examined data that the comptroller collected from 43 of Texas' fastest-growing school districts (because they know a thing or two about building schools).

As the data analysis began, the 43 sample districts fell into very obvious regions. These regions, which were assigned a particular name, quickly became the central theme for telling the story about school construction costs.



North

Crandall
Denton
Eagle Mountain-Saginaw
Everman
Forney
Frisco
Lewisville
Little Elm
Lovejoy
Mansfield
Midlothian
Northwest
Prosper
Rockwall
Royse City

East*

Hallsville

Southeast

Aldine
College Station
Conroe
Dickinson
Fort Bend
Humble
Katy
Magnolia
Montgomery
New Caney
Sheldon
Spring
Waller

Central

Austin
Belton
Comal
Del Valle
Elgin
Hays
Killeen
Lake Travis
Leander
Liberty Hill
North East
Northside
Pflugerville

West*

Frenship

*The East and West regions only had one school district, each, in the data sample of 43 districts, so no major conclusions will be drawn about either region.

No Two Regions Were Created Equal (In Texas)

What happens when you lump together every school (elementary, middle, high school and other academic facilities) that was built in a region on a given year?

Even without precise numbers, a pattern starts to emerge about these regions.



Looks like there is a noticeable difference in cost between regions, and Central Texas might be the most expensive region to build a school in...

- > IN **2005**, THE AVERAGE COST PER SQ. FT. OF SCHOOLS IN CENTRAL TEXAS WAS **5 PERCENT** MORE THAN IN NORTH TEXAS AND **38 PERCENT** MORE THAN SOUTHEAST TEXAS.
- > IN **2012**, THE AVERAGE COST PER SQ. FT. OF SCHOOLS IN CENTRAL TEXAS WAS **6 PERCENT** MORE THAN IN NORTH TEXAS AND **24 PERCENT** MORE THAN SOUTHEAST TEXAS.

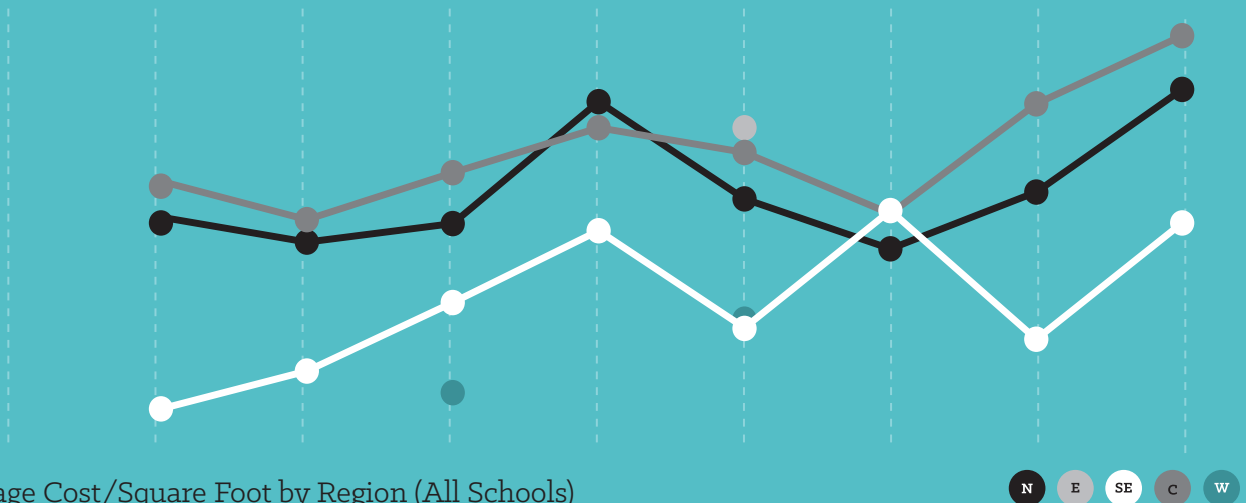


TABLE 1 Average Cost/Square Foot by Region (All Schools)

	2004	2005	2006	2007	2008	2009	2010	2011	2012
North		\$149.92	\$145.18	\$148.70	\$171.87	\$153.39	\$143.90	\$154.69	\$174.20
East						\$165.32			
Southeast		\$113.48	\$120.67	\$133.69	\$147.34	\$128.90	\$151.17	\$126.72	\$148.82
Central	\$131.99	\$156.74	\$149.45	\$158.37	\$166.91	\$162.22	\$150.58	\$171.46	\$184.41
West				\$114.69		\$129.19			

* The years used throughout this report represent **starting construction dates**.

Evaluating Each Type of School By Region

ELEMENTARY SCHOOLS

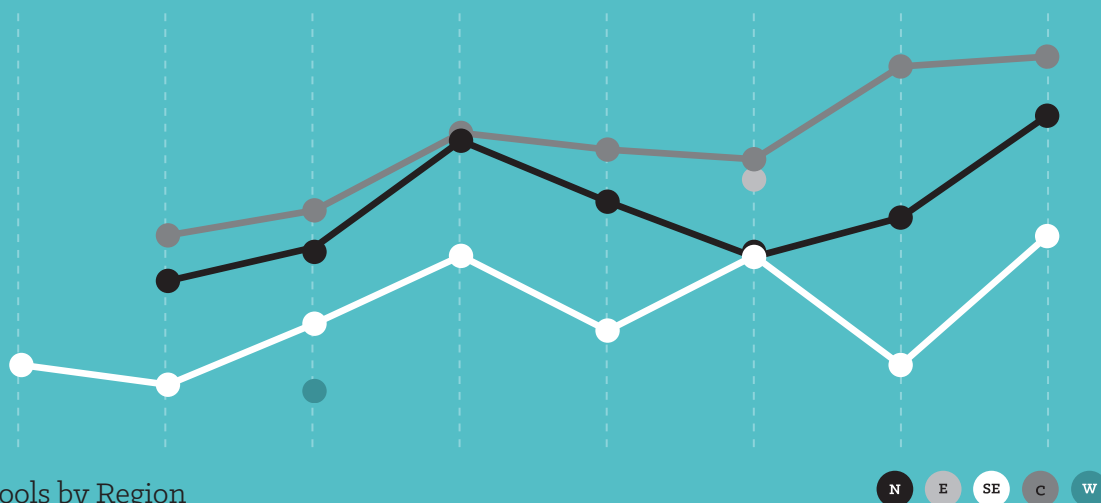


TABLE 2 Elementary Schools by Region

	2004	2005	2006	2007	2008	2009	2010	2011	2012
North			\$139.93	\$146.40	\$167.73	\$155.64	\$144.68	\$152.49	\$172.69
East						\$153.66			
Southeast		\$123.25	\$119.34	\$131.44	\$144.89	\$130.08	\$144.91	\$123.25	\$148.82
Central			\$148.96	\$153.92	\$169.28	\$165.97	\$164.06	\$182.46	\$184.41
West				\$114.69					

* The years used throughout this report represent **starting construction dates**.

TOP 50 MOST "EXPENSIVE" ELEMENTARY SCHOOLS FROM 2006-2012*

No.	Region	District	School	Starting Construction Date	Cost Per Sq. Ft.
1	Central	North East	Cibolo Green ES	November 2008	\$222.01
2	Central	Comal	Oak Creek ES	March 2008	\$220.85
3	Central	Comal	Garden Ridge ES	July 2009	\$210.74
4	Central	North East	Tuscany Heights ES	January 2009	\$207.85
5	Central	Northside	Dr. Sara B. McAndrew ES	January 2012	\$206.51
6	Central	Comal	Clear Spring ES	May 2009	\$205.77
7	Central	Austin	Overton ES	August 2006	\$201.55
8	Central	Comal	Morningside ES	August 2007	\$197.72
9	Central	Comal	Kinder Ranch ES	May 2010	\$197.38
10	Central	Comal	Indian Springs ES	November 2011	\$197.16
11	North	Rockwall	Billie Stevenson ES	May 2012	\$196.56
12	Central	North East	Las Lomas ES	January 2011	\$195.52
13	Central	North East	Vineyard Ranch ES	January 2011	\$194.98
14	Central	Northside	Bobbie Behlau ES	October 2008	\$190.49
15	North	Lewisville	Lewisville ES	January 2008	\$189.33
16	SE	College Station	College Hills ES	June 2008	\$188.30
17	Central	Comal	Mountain Valley ES	June 2012	\$186.87
18	North	Lewisville	Independence ES	January 2007	\$185.80
19	Central	Northside	Charles L. Kuentz, Jr. ES	December 2007	\$183.82
20	Central	Northside	Jim G. Martin ES	October 2008	\$183.50
21	Central	Austin	Guerrero-Thompson ES	August 2012	\$183.43
22	North	Northwest	Clara Love ES	January 2008	\$182.80
23	North	Northwest	Roanoke ES	January 2009	\$182.36
24	Central	Northside	Kay Franklin ES	March 2012	\$181.82
25	Central	Northside	Ralph Langley ES	February 2008	\$180.64
26	North	Northwest	Cox ES	January 2012	\$180.48
27	North	Frisco	Nichols ES	April 2011	\$177.93
28	Central	Northside	John Hoffmann ES	October 2007	\$176.17
29	Central	Comal	Freiheit ES	April 2006	\$174.50
30	North	Midlothian	Miller ES	March 2007	\$172.40
31	Central	Northside	Edmund Lieck ES	July 2010	\$172.33
32	Central	Northside	Judge Andy Mireles ES	July 2009	\$172.33
33	Central	Comal	Johnson Ranch ES	March 2008	\$171.85
34	North	Denton	Cross Oaks ES	August 2009	\$169.30
35	Central	Northside	Dr. Pat Henderson ES	July 2009	\$168.81
36	Central	Comal	Startzville ES	May 2006	\$168.77
37	North	Frisco	Allen ES	March 2008	\$167.84
38	Central	Pflugerville	Riojas ES	July 2008	\$165.48
39	North	Crandall	Barbara Walker ES	August 2008	\$165.20
40	North	Northwest	Granger ES	January 2006	\$164.47
41	North	Rockwall	Celia Hays ES	June 2006	\$163.58
42	Central	Belton	High Point ES	September 2012	\$163.40
43	North	Lewisville	Peters Colony ES	January 2009	\$163.01
44	North	Northwest	Schluter ES	January 2010	\$161.47
45	SE	Conroe	Snyder ES	January 2012	\$161.31
46	North	Rockwall	Sharon Shannon ES	June 2006	\$161.03
47	SE	College Station	Greens Prairie ES	June 2010	\$161.02
48	Central	Northside	Nora Forester ES	October 2006	\$159.49
49	Central	Northside	Evelyn Scarborough ES	April 2007	\$157.67
50	Central	Northside	Los Reyes ES	July 2010	\$156.35

➤ **157** ELEMENTARY SCHOOLS WERE BUILT IN TEXAS FROM **2006-2012**

➤ THE **TOP 10** MOST "EXPENSIVE" ELEMENTARY SCHOOLS IN TEXAS WERE BUILT IN **CENTRAL TEXAS**

*within the data sample of 43 districts

MIDDLE SCHOOLS



TABLE 3 Middle Schools by Region

	2004	2005	2006	2007	2008	2009	2010	2011	2012
North		\$176.81	\$155.86	\$137.33	\$162.99	\$146.19	\$141.55	\$163.48	\$165.91
East									
Southeast		\$103.72	\$115.82	\$135.50	\$135.02	\$112.52	\$141.44	\$142.42	
Central		\$156.52	\$166.25	\$167.62	\$161.24	\$150.95	\$130.03	\$152.90	
West						\$129.19			

* The years used throughout this report represent starting construction dates.

ALL MIDDLE SCHOOLS BUILT FROM 2006-2012*

No.	Region	District	School	Starting Construction Date	Cost Per Sq. Ft.
1	Central	Northside	Dolph Briscoe MS	August 2008	\$202.53
2	Central	Northside	Dr. Hector P. Garcia MS	September 2007	\$196.42
3	Central	Austin	Gorzycki MS	March 2009	\$179.94
4	North	Lewisville	Killian MS	January 2005	\$176.81
5	North	Frisco	Cobb MS	November 2008	\$174.94
6	North	Northwest	Tidwell MS	January 2008	\$170.20
7	Central	Northside	Wallace B. Jefferson MS	November 2005	\$167.59
8	North	Eagle Mtn.-Sag.	Ed Willkie MS	March 2008	\$167.24
9	North	Lovejoy	Willow Springs MS	January 2012	\$166.51
10	Central	Northside	Robert L. Vale MS	July 2006	\$166.25
11	North	Denton	Myers MS	May 2012	\$165.31
12	North	Frisco	Maus MS	December 2008	\$164.30
13	North	Frisco	Vandeventer MS	February 2011	\$163.48
14	Central	Hays	Simon MS	May 2008	\$161.67
15	Central	Northside	Dr. John M. Folks MS	October 2011	\$158.99
16	North	Frisco	Hunt MS	November 2008	\$157.41
17	North	Frisco	Stafford MS	December 2006	\$155.86
18	SE	Conroe	Peet Junior High	October 2011	\$153.76
19	SE	Sheldon	Michael R. Null MS	February 2008	\$152.06
20	Central	Belton	South Belton MS	April 2010	\$149.08
21	North	Denton	Harpool MS	January 2007	\$146.95
22	Central	Pflugerville	Cele MS	August 2011	\$146.81
23	North	Everman	Baxter Junior High	January 2009	\$146.19
24	Central	North East	Lopez MS	March 2005	\$145.46
25	North	Mansfield	Jobe MS	October 2007	\$143.87
26	SE	Dickinson	Barber MS	March 2007	\$142.46
27	North	Northwest	Wilson MS	January 2010	\$141.55
28	SE	Conroe	Irons Junior High	October 2010	\$141.44
29	North	Frisco	Scoggins MS	February 2007	\$141.04
30	Central	Elgin	Elgin MS	July 2007	\$138.82
31	Central	Del Valle	Dailey MS	May 2009	\$137.88
32	SE	Humble	Wood Creek MS	November 2008	\$137.42
33	Central	Killeen	Patterson MS	March 2009	\$135.05
34	SE	Katy	Cardiff Junior High	March 2007	\$133.47
35	SE	Fort Bend	Missouri City MS	June 2006	\$131.67
36	SE	Katy	Seven Lakes Junior High	March 2011	\$131.09
37	SE	Katy	Wood Creek Junior High	March 2007	\$130.56
38	West	Friendship	Heritage MS	March 2009	\$129.19
39	North	Prosper	Rogers MS	April 2007	\$124.00
40	SE	Conroe	York Junior High	August 2006	\$119.60
41	Central	Leander	Four Points MS	April 2008	\$119.52
42	SE	Aldine	Lewis MS	January 2008	\$115.58
43	SE	Fort Bend	James Bowie MS	October 2009	\$112.52
44	Central	Leander	Stiles MS	April 2010	\$110.99
45	SE	Fort Bend	Crockett MS	November 2005	\$103.72
46	SE	Montgomery	Montgomery Junior High	January 2006	\$96.18

➤ OUT OF THE **TOP 10** MOST "EXPENSIVE" MIDDLE SCHOOLS IN TEXAS, 5 WERE BUILT IN **CENTRAL TEXAS** AND 5 WERE BUILT IN **NORTH TEXAS**

*within the data sample of 43 districts

INTERMEDIATE SCHOOLS

By definition, an intermediate school can house Grades 4 – 6 or just Grades 5 & 6. This grade level variance results in school buildings that are not quite as big as middle schools, but also not as small as elementary facilities.

The intermediate identity crisis means that the cost of intermediate schools is constantly fluctuating, even without considering outside factors, such as regional location. This essentially saves them from being lumped into any group that could potentially be averaged.

According to the comptroller's data, from 2006-2012*, only seven intermediate schools were built in Texas.

- "Lowest" Cost Per Square Foot: Rayford Road Intermediate School, Aldine ISD – \$122.85 per square foot
- "Highest" Cost Per Square Foot: Bozman Intermediate School, Conroe ISD – \$177.24 per square foot

HIGH SCHOOLS



TABLE 4 High Schools by Region

	2004	2005	2006	2007	2008	2009	2010	2011	2012
North		\$136.48		\$161.95	\$166.26	\$159.59			\$196.77
East						\$176.99			
Southeast				\$147.56	\$179.03		\$165.43	\$126.65	
Central	\$131.99	\$157.17	\$143.99	\$184.40	\$120.74			\$153.56	
West									

* The years used throughout this report represent starting construction dates.

ALL HIGH SCHOOLS BUILT FROM 2006-2012*

No.	Region	District	School	Starting Construction Date	Cost Per Sq. Ft.
1	SE	College Station	College Station HS	April 2010	\$205.51
2	North	Midlothian	Heritage HS	September 2012	\$196.77
3	Central	Northside	William J. Brennan HS	December 2007	\$184.40
4	SE	Fort Bend	Ridge Point HS	July 2008	\$182.09
5	North	Frisco	Lone Star HS	August 2007	\$179.41
6	East	Hallsville	Hallsville HS	November 2009	\$176.99
7	SE	New Caney	Porter HS	March 2008	\$175.97
8	North	Lewisville	Lewisville HS	January 2009	\$168.04
9	North	Northwest	Byron Nelson HS	January 2007	\$167.34
10	North	Frisco	Heritage HS	June 2007	\$167.19
11	North	Forney	North Forney HS	April 2008	\$166.26
12	Central	Northside	Louis D. Brandeis HS	March 2006	\$161.30
13	Central	North East	Johnson HS	September 2005	\$157.17
14	Central	Liberty Hill	Liberty Hill HS	October 2011	\$153.56
15	North	Frisco	Liberty HS	June 2005	\$148.82
16	SE	Humble	Summer Creek HS	February 2007	\$147.56
17	North	Prosper	Prosper HS	October 2007	\$133.85
18	Central	Comal	Canyon Lake HS	August 2004	\$131.99
19	North	Mansfield	Lake Ridge HS	July 2009	\$129.50
20	Central	Leander	Rouse HS	July 2006	\$126.68
21	SE	Katy	Tompkins HS	April 2011	\$126.65
22	SE	Aldine	Davis HS	January 2010	\$125.35
23	North	Mansfield	Legacy HS	April 2005	\$124.13
24	Central	Leander	Vandegrift HS	December 2008	\$120.74

THE TOP THREE MOST "EXPENSIVE" HIGH SCHOOLS IN TEXAS WERE EACH BUILT IN A DIFFERENT REGION, WHICH SUGGESTS TWO THINGS:

- > **LESS HIGH SCHOOLS** ARE **BUILT** THAN ELEMENTARY OR MIDDLE SCHOOLS
- > WHEN IT COMES TO THE BIGGER SCHOOLS, **LOCAL COMMUNITY PREFERENCES** HAVE A **GREATER IMPACT** ON **COST** THAN REGIONAL LOCATION

*within the data sample of 43 districts

OTHER ACADEMIC FACILITIES BUILT FROM 2006–2012*

No.	Region	District	School	Starting Construction Date	Cost Per Sq. Ft.
1	North	Denton	Virginia Gallian Child Development Center	June 2008	\$257.07
2	North	Denton	Gonzalez Early Learning Center	June 2009	\$213.30
3	Central	Del Valle	Opportunity Center	June 2008	\$206.44
4	North	Frisco	Career & Technology Education Center	June 2006	\$197.51
5	North	Lewisville	Hebron 9th Grade Center	January 2008	\$195.97
6	Central	Austin	Uphaus Early Childhood Center	April 2011	\$194.27
7	North	Lewisville	Career Center East	January 2008	\$193.51
8	North	Eagle Mtn.-Saginaw	Hollenstein Career & Technology Center	March 2009	\$190.67
9	North	Lewisville	Ben Harmon (9th & 10th)	January 2009	\$181.86
10	Central	Killeen	Pathways (At Risk) Academy	October 2010	\$173.12
11	North	Frisco	Early Childhood School	June 2008	\$171.86
12	North	Everman	Jefferson Davis 9th Grade Center	January 2007	\$140.90
13	SE	Fort Bend	Ferndell Henry Center for Learning	June 2009	\$140.52
14	SE	Aldine	Davis 9th Grade School	January 2011	\$125.35
15	SE	New Caney	NCHS 9th Grade Annex	February 2006	\$122.23
16	Central	Killeen	New Career Academy	October 2010	\$115.22
17	SE	Sheldon	Sheldon Early College High School	January 2011	\$110.65
18	North	Midlothian	Ag Science Facility	March 2009	\$2.84

*within the data sample of 43 districts

The “Others”

In 2009, Eagle Mountain-Saginaw ISD built both a high school and a career and technology (CTE) center.

Chisholm Trail High School

- 450,302 sq. ft.
- \$181.23/sq. ft.



Hollenstein Career and Technology Center

- 133,079 sq. ft.
- \$190.67/sq. ft.



Regardless of whether or not the data collected by the comptroller is accurate, this scenario proved to be the perfect case study for explaining the cost-related differences between these two types of facilities.

Most of the time, CTE centers have higher costs per square foot than their regular high school counterparts, even if they are smaller facilities overall. This difference in cost is mainly due to the basic functions of the buildings.

CTE spaces require a lot of specialty equipment that can be more expensive. While high schools often include CTE classrooms, these career and tech spaces are a very small percentage of the overall building, so the high cost of the CTE rooms is balanced by the lower costs of large core spaces.

Career and Technology Centers, on the other hand, consist of concentrated CTE spaces, which means expensive equipment throughout the entire facility.

Essentially, career and technology centers might have less square footage than regular high schools, but most of the time, the overall cost of the facility will still be more because of the sheer amount of specialty equipment needed to fulfill the purpose of the building.

This statement could potentially apply to the majority of “other academic facilities” because their cost will always reflect the specialty function of the building, more than the size of the facility or even the region it is built in. The only exception to this would be 9th or 9th-10th Grade Centers because, even if they fall into the category of “other academic facility,” they will usually have the same finishes and equipment as regular high schools.

Diving Deeper into Regional Differences

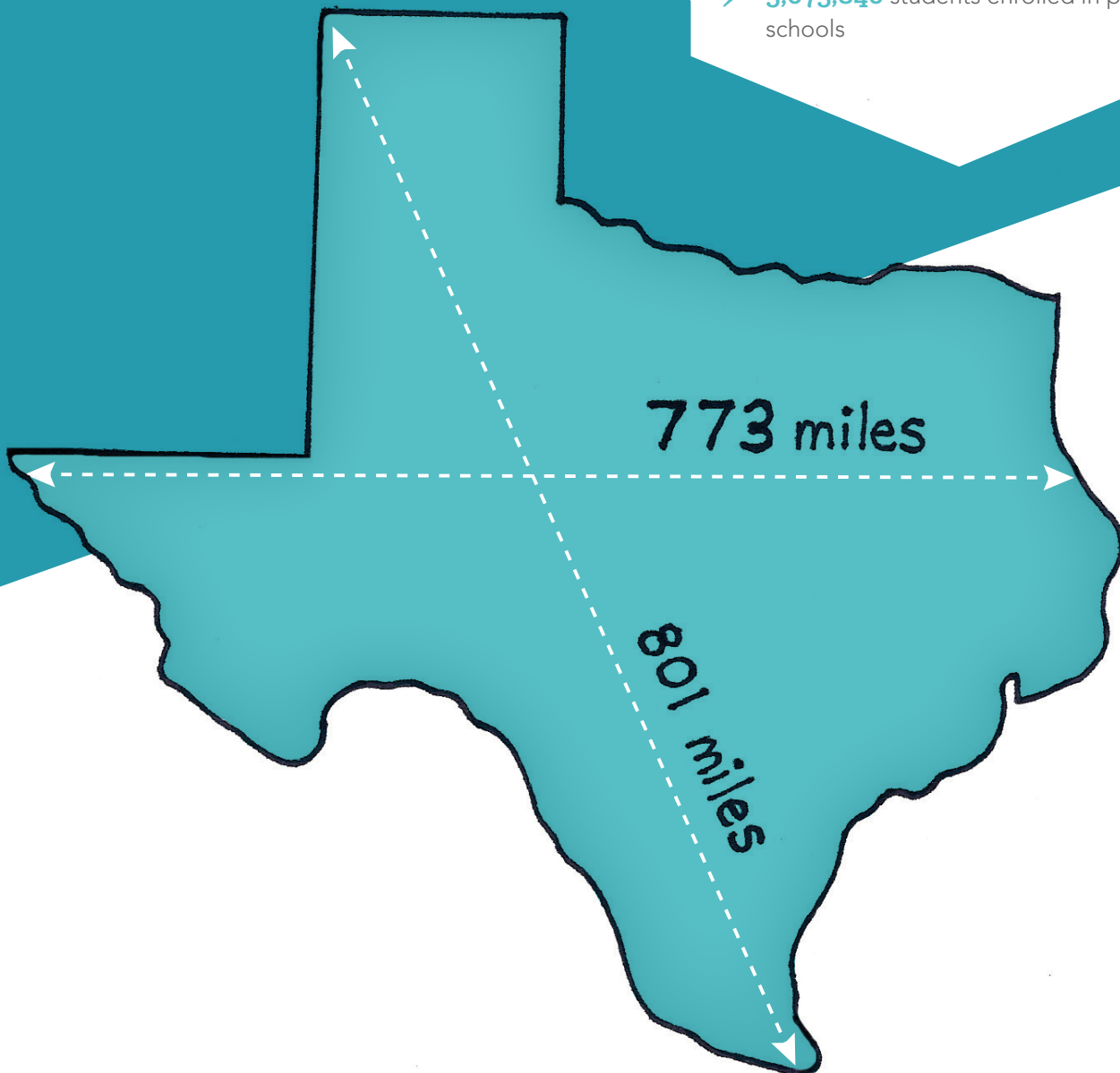
As you have seen, looking at schools by region and by school type shows that cost does significantly change from one region to another.

Why would this cost difference between regions exist?

EXPLAINING TEXAS:

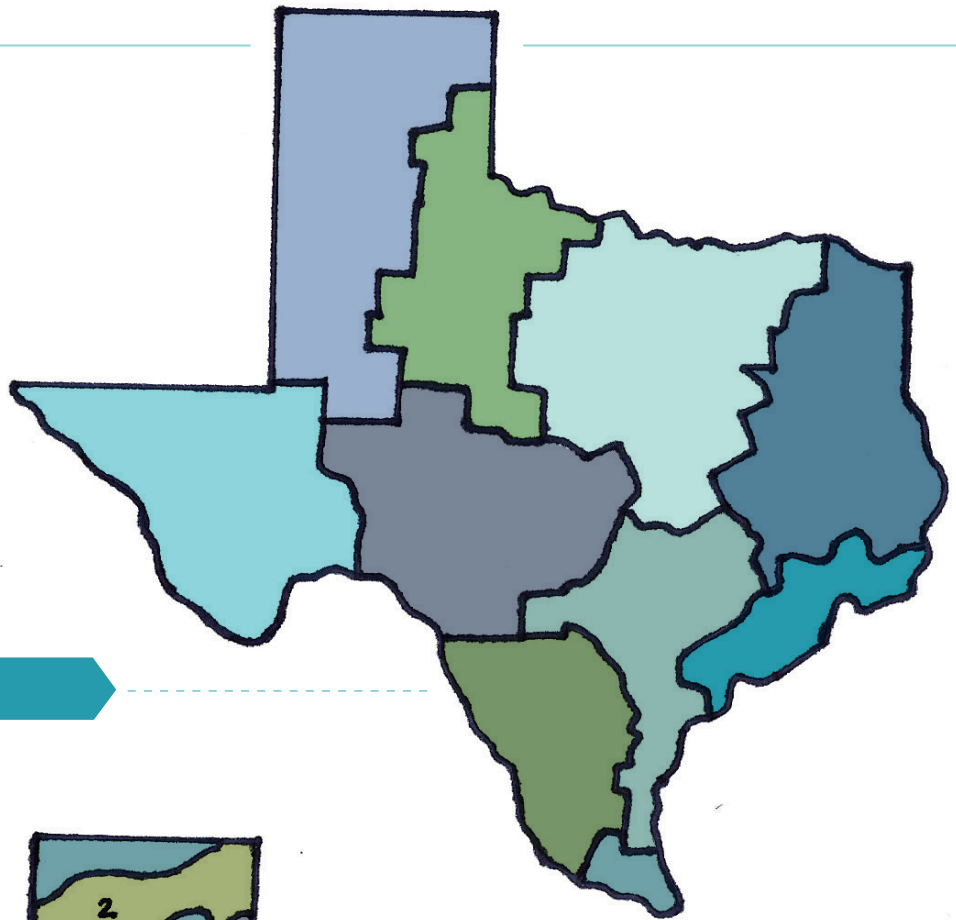
*Texas is **BIG**...*

- > **268,820** square miles big
(That's approximately the size of France)
- > It's big enough to cover **TWO** time zones
- > It has **254** counties,
- > **1,215** incorporated cities,
- > **1,024** public school districts, and
- > **5,075,840** students enrolled in public schools



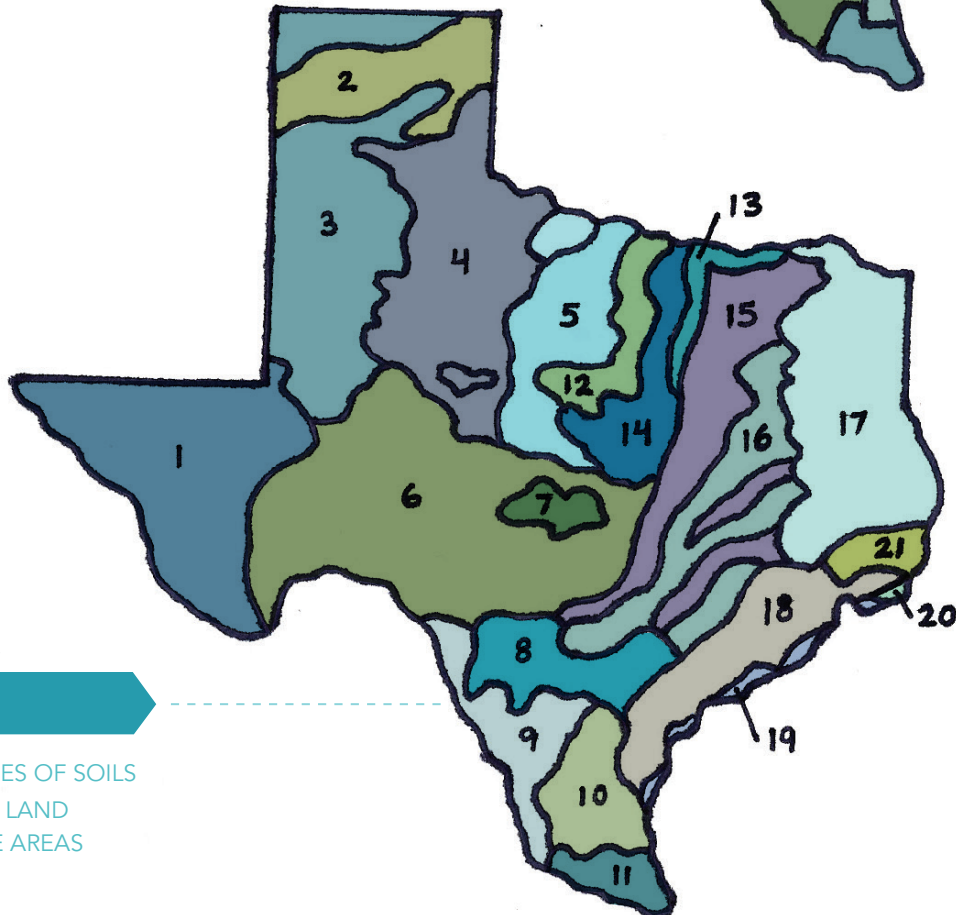
TEXAS ALSO HAS A LARGE RANGE OF:

Climate and soil conditions are extremely significant to a construction project because they have a direct impact on what kind of foundation a building needs to have, which subsequently affects the overall construction cost. The climate in which a construction project is built can also affect heating and cooling requirements for a building, which, once again, can cause an increase in cost.



CLIMATES

- 10 CLIMATE REGIONS



SOILS

- 1,300 TYPES OF SOILS
- 21 MAJOR LAND RESOURCE AREAS

What Other Factors Could Play Into the Regional Cost Differences?



Edwards Aquifer

In order to protect the Edwards Aquifer, the expansive groundwater system that spans across south-central Texas, a protection program regulates all construction projects that could potentially pollute the water. This often results in substantial additional costs for school construction projects in and around the Austin and San Antonio areas.

Eagle Ford Shale

Since 2008, the Eagle Ford Shale has become one of the largest oil and natural gas developments in the United States. The UTSA Institute for Economic Development reported that this heavily drilled rock unit has already created a 19.2 billion dollar output for the 14 producing counties. The impacts of this have been monumental. The south-central region of Texas has seen significant growth, which has had obvious effects on job numbers, the housing market and the construction industry. The overwhelming demand for construction services has driven prices up and school construction costs have felt the impact.

> HEAR WHAT LEADING ENGINEERS, ARCHITECTS AND CONTRACTORS IN THE K-12 SCHOOL BUSINESS HAVE TO SAY ABOUT REGIONAL COST DIFFERENCES...

“The sheer size of Texas and its central location makes it as ***diverse as the entire contiguous United States*** from east to west. We share soil conditions, climates, labor forces, cultures, economic sectors and many other factors with California, the same as we do with states in the northeast. This ***extreme diversity*** leads to obvious construction cost differences throughout the state.”

“***Access to materials and suppliers***, for instance steel mills, cement plants, etc., definitely has an effect on regional cost differences.”

“The sheer volume of construction projects that are going on in a region, besides just schools, will create such a ***high demand for materials and equipment*** that construction costs go way up.”

“***Manpower*** has a significant impact on regional cost differences – the ability to provide the necessary labor to complete a project in a timely and equitable manner. Central Texas is sparsely populated in comparison to Dallas, Austin, San Antonio and Houston. It is not uncommon for multiple bond projects to pass in communities, thus creating a ***strong construction climate***. When the local subcontractors are at capacity, crews are often imported from larger cities, creating per diem reimbursements and impacting cost. Recessions and subsequent worker layoffs create a ***shortfall of skilled workers*** available for rehire because some take early retirement and others find different jobs. We need more trained and skilled workers for the construction industry. Our company currently trains workers for steel erection and certifies welders, but all companies that self-perform specific trades must provide their own in-house training programs due to the current lack of trade schools.”

Victims of Regional Circumstances

From 2006-2012, there were 46 fast-growth middle schools constructed in Texas. The top three middle schools with the highest cost per square foot were built in Central Texas. The top two of those three were built in Northside ISD in San Antonio.*

So, why are Northside ISD middle schools topping the cost per square foot charts?

1.	Briscoe Middle School	\$202.53
2.	Garcia Middle School	\$196.42

When taking a closer look at the nature of these two projects, an interesting pattern began to emerge. The following descriptions were taken from Northside ISD notes regarding each of the projects:

Briscoe Middle School

- Extensive site layering over rock
- Retaining walls

Garcia Middle School

- Extensive site layering over rock
- Water quality pond
- Storm sewer lift station

Notice any patterns?

----- Briscoe Middle School -----



----- Garcia Middle School -----

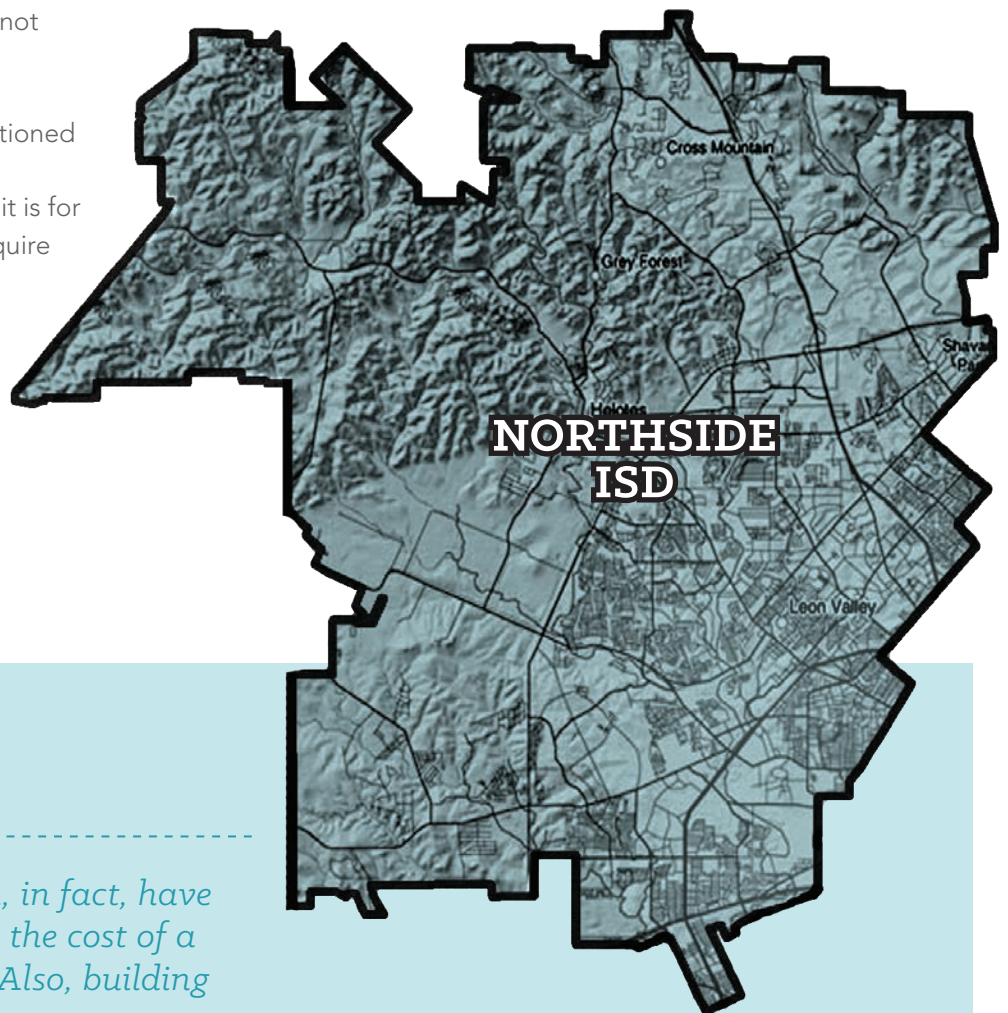


**within the data sample of 43 districts*

More documents from NISD revealed the challenges of building a school in their part of the state. As it turns out, multiple regionally-specific factors are at play:

- Proximity to the **Eagle Ford Shale** creates a very noticeable disadvantage for Northside ISD and other districts in the region. The area already lacks the volume of contractors that other cities count on, but the few that exist are all being hired away.
- Northside ISD is experiencing what one could only describe as **regulatory overload**. The district's location and exact boundaries require them to comply with numerous municipal, county, state and federal regulations that all require something different (often at a price). Most districts around Texas struggle with this issue, but not all districts have to worry about aquifers, endangered species, archaeological studies, historical studies, tree ordinances and building permits, all at once.
- It is very probable that Northside ISD has to deal with a lot more challenging sites than other districts. The area within their district boundary lacks usable land, and the topography they are forced to build on is not particularly great.

The two middle schools mentioned previously have already demonstrated how common it is for Northside ISD projects to require extensive sitework, either because of ordinances or because they simply cannot build on the land they have available without moving things around. However, the following topographic map should speak for itself.



THE MORAL OF THE STORY:

Regional location can, in fact, have a significant effect on the cost of a construction project. Also, building on rocks is not fun.


Starting to Understand...

AS YOU MAY HAVE NOTICED, THE REGIONAL COST DIFFERENCES ALONE SHOULD START TO EXPLAIN WHY THE COST OF

A SCHOOL BUILDING IN NORTH TEXAS

SHOULD **NOT** BE AVERAGED WITH THE COST OF A SCHOOL

IN SOUTHEAST TEXAS.



————— Because as long as
there is a wide range of
environmental conditions
in Texas, there will
continue to be a **wide
range of construction costs**
and **little room for the
standardization**
of school buildings...

› *But if you're still not convinced
that there is no such thing as an
“average” cost for any type of school
in Texas, let's take a dive into the
world of K-12 architecture.*



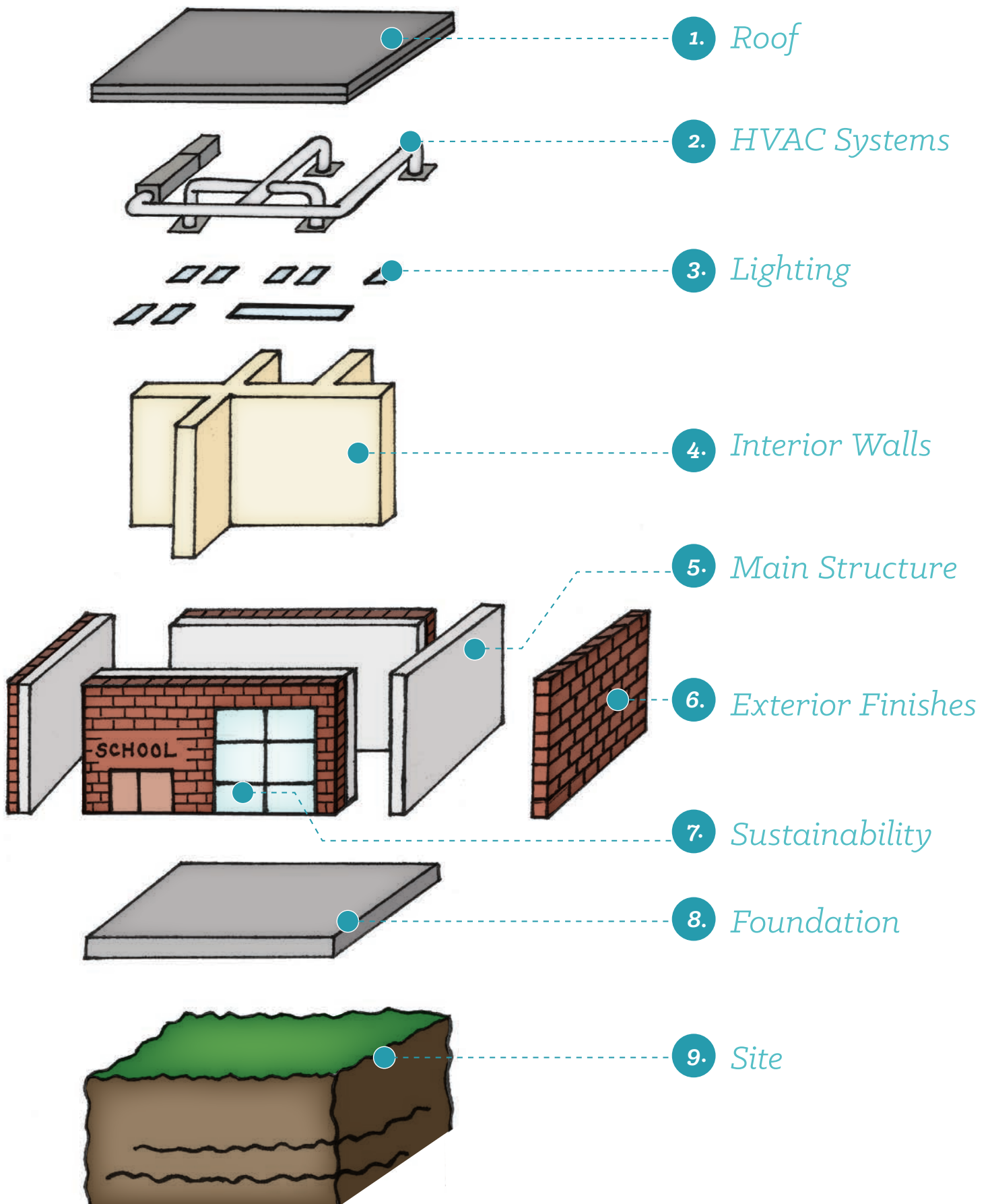
Construction 101: **EVERYTHING COSTS MONEY**

A facilities director of over twenty years once begged the question, “Why would a district cut costs at the front-end of a project when the initial construction cost is only 5 to 10 percent of the total cost of a project in its entire lifecycle?”

Every last nut and bolt of a building costs money, but there are integral parts of a building that cost a lot more than most people would think – especially if peoples’ perception of construction costs stems from a residential construction project. That means construction projects are going to cost a lot of money no matter what. When you think about the costs of maintaining and operating a facility for 40 to 50 years (and with very limited budgets), it makes good financial sense for school districts to invest in high quality, durable materials, even at a higher initial cost. If a school is built with cheap materials and parts, the operating and maintenance costs of the facility over the life of the building will dwarf the initial cost.

If money is spent wisely during construction, taking energy efficiency and durable materials into consideration, there will be a major return with reduced lifecycle costs.

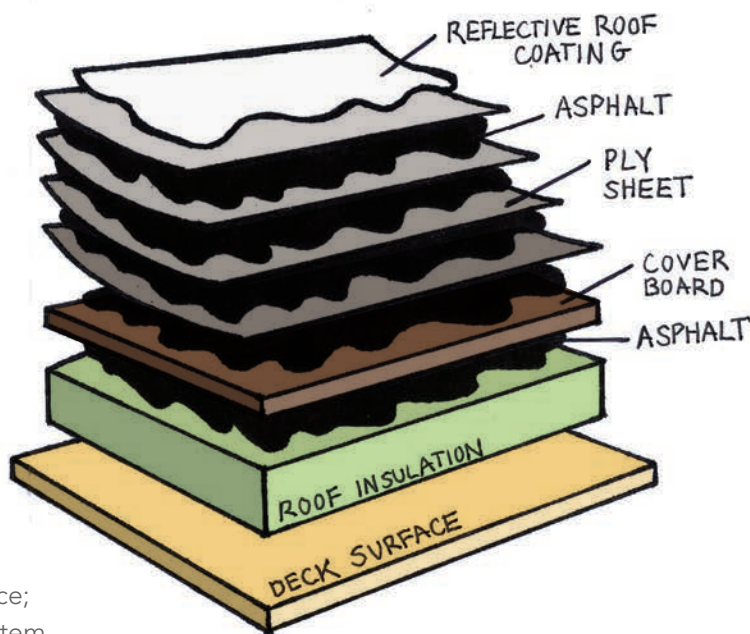
Let’s look at nine major parts of a school building that can significantly alter both the initial and long-term cost of a building.



1. ROOF SYSTEMS

The most common types of roof systems for academic facilities are 4-ply built-up roofs, single-ply roofs and standing seam metal roofs.

- **Single-ply Roof:** generally, has a cheaper cost per square foot; more energy efficient due to its high reflectivity; can wear faster and require more maintenance
- **4-ply Built-Up Roof:** may cost a bit less than single-ply roofs; can last longer and require little maintenance; considered a more economical roof system
- **Standing Seam Metal Roof:** tends to be the most expensive type of roof because metal is a relatively expensive roofing material and the system is not as easy to install as single-ply or 4-ply roofs, but it is a long-lasting system



2. HVAC SYSTEMS

There are four major types of HVAC systems that are commonly found in school buildings:

- **Roof-Top Units:** most simple type of HVAC system; regular and high efficiency models available; tend to last up to 15 years; exposed to the elements year-round
- **Split Systems:** have the highest maintenance cost of all HVAC systems; run on refrigerant instead of water or steam; require a specialized technician for operation and maintenance
- **4-Pipe Chillers:** easy to control from one consolidated equipment room; tend to have high maintenance costs; require a specialized technician
- **Geothermal Heat Pumps:** require digging on site and locating well fields, which can make for high initial costs; relatively simple to use and result in considerable energy savings; have been classified by the Environmental Protection Agency as the most energy efficient system

3. LIGHTING

The cost of lighting for a school building is no longer determined by the initial purchase price of light fixtures. Instead, district leaders must calculate lighting costs based on the following:

- *The energy efficiency of the lamps:* Over their lifetime, most light fixtures will consume several times their purchased price in electricity, so specifying the amount of energy that is needed to power a lamp is very important
 - *The life expectancy of the lamps:* It does no good to have low-priced lamps if they only last a week at a time because the total cost of replacing lamps includes the actual product cost (the lamps themselves), as well as labor costs
 - *The available controls for lighting:* If a lighting system is equipped with dimming controls, occupancy sensors, daylight harvesting features, etc., it allows for better management of energy consumption, which can cut energy costs significantly
-

4. INTERIOR WALLS

The following interior wall constructions are most commonly seen in school buildings:

- *Sheet Rock + Metal Stud:* lowest cost; least resistant to abuse, which results in more maintenance
 - *Ceramic Tile + Sheet Rock + Metal Stud:* medium level maintenance required
 - *Plastic Laminate Wall Panels + Sheet Rock + Metal Stud:* lower maintenance; highly durable
 - *Masonry Units:* most expensive interior wall type, but very low maintenance and highly durable
-

5. MAIN STRUCTURE

Most school buildings are constructed with one of the following:

- *Steel Stud Systems:* lowest cost; shortest lifecycle; lower insulation value; quick construction time
- *Full Masonry Systems:* medium cost; long lifecycle; higher insulation value; long construction time
- *ICF (Insulated Concrete Form) Systems:* highest cost (but not by much); long lifecycle; highest insulation value; quick construction time

6. EXTERIOR FINISHES

The following is a list of the most common exterior finishes for school buildings:

- *Brick*
 - *Cast Stone Masonry*
 - *Concrete Masonry Units*
 - *Metal Wall Panels*
 - *Local Natural Stone*
 - *Imported Natural Stone:* Importing natural stone is significantly more expensive than using local stone
-

7. SUSTAINABILITY INITIATIVES

Most sustainability initiatives have a high initial cost, but their return on investment is significant enough to encourage districts to implement them.

Some of the most common initiatives include:

- *Xeriscaping:* landscaping with drought resistant plants
 - *Rainwater and/or Greywater Collection*
 - *Irrigation Sensors*
 - *Low-Flow Fixtures*
 - *Commissioning*
 - *Energy Efficient Windows*
 - *Shading Devices*
 - *Direct Digital Control (DDC) Energy Management Systems*
-

8. FOUNDATION

The type of foundation used for a building mostly depends on the soil and topographic conditions of the site, but sometimes, school districts set a standard for foundation construction based on safety precautions or community preference.

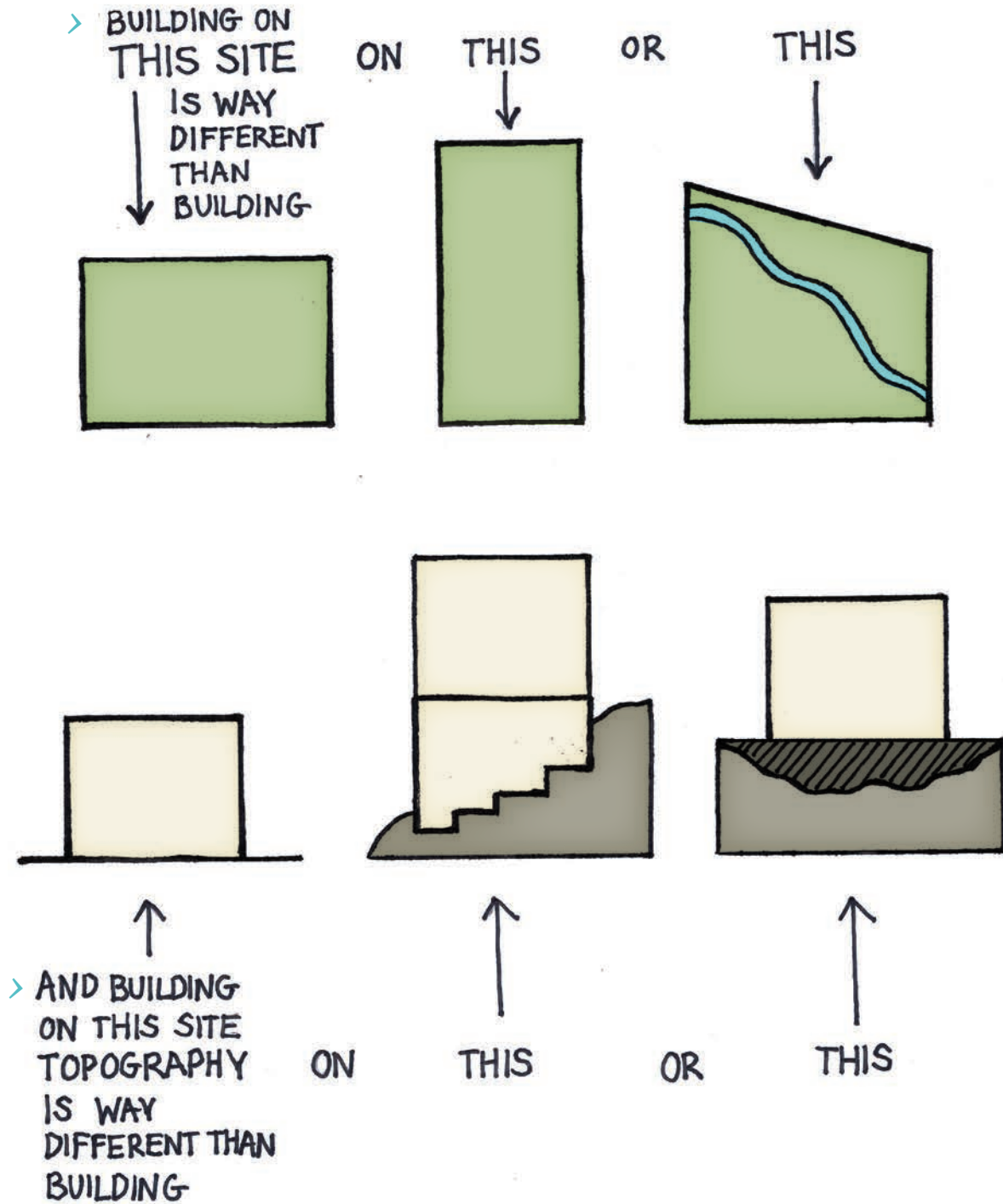
The following are the three most common types of foundations for school buildings:

- *Slab on Grade:* a concrete slab placed directly on the earth; least expensive type of foundation
- *Suspended Structural Slab:* a concrete slab elevated off of the earth; more expensive than a slab on grade
- *Crawl Space:* a concrete slab elevated off of the earth with enough room for a person to crawl underneath the building for maintenance; most expensive type of foundation due to the amount of materials and labor involved in its construction; allows for easy access to underfloor piping and wiring, which comes in handy during technology upgrades, renovations and expansions.

*Depending on the height of the crawl space, the cost difference between the most expensive foundation and the least expensive, slab on grade, could be **millions of dollars!***

9. SITE

As mentioned on previous occasions, the site of a school construction project can create incredibly costly challenges that cannot be taken for granted. Much like the larger regions of Texas, no two sites were created equal, which means no two school buildings can be considered equal.



Heritage High School, Frisco ISD
\$167.19/sq. ft.



A Tale of Two Sites (*and Dates*)

In 2007, Frisco ISD began the construction of two new high schools, approximately eight miles apart. Being that the two schools were built in the same city, school district and in the same year, it was surprising to find out that their costs per square foot were different. In hopes of solving the mystery behind the cost disparity, we collected the following information about the two schools:

COMMONALITIES:

Capacity

- Grades 9-12
- Built for 1,800 students

Program

- Collegiate atmosphere
- Adaptable to multiple learning styles
- Same amenities

Materials

- Local
- Durable
- Easy to maintain

Sustainability Initiatives

- Geothermal mechanical system to ensure low life cycle costs and energy efficiency
- Solar control from exterior shading elements
- Tinted glazing to reduce heat gain
- Xeriscaping – native, drought resistant plants



Lone Star High School, Frisco ISD
\$179.41/sq. ft.

So, with all of the noticeable similarities between the two high schools, why would Lone Star High School cost \$12.22 more per square foot than Heritage High School? As it turns out, two major factors contributed to this difference in cost.

1. Site

Heritage High School had a very narrow site that forced architects to come up with a more compact solution. Lone Star High School's site was approximately 10 acres larger than the Heritage site, but it brought many more challenges to the construction process. Aside from having to deal with existing power lines and utilities running throughout the site, the architects and engineers working on Lone Star had to deal with a sloping topography. At the end of the day, the earthwork costs for Lone Star High School were about \$300,000 more than for Heritage.

2. Bid Dates

At the same time that Frisco ISD was taking two high school projects to bid, a small facility, formerly known as Cowboys Stadium, was being built in the same metroplex. Not only did the construction of "Jerry World" create bidding restrictions for other projects, it also created a significant shortage of mechanical, electrical and plumbing consultants because they were all being hired to work on the stadium. These circumstances resulted in Lone Star going to bid two months after Heritage, at which point the cost for plumbing had increased dramatically. Ultimately, plumbing became a significant cost difference between the two Frisco ISD projects, all thanks to the timing of the bid date.

THE MORAL OF THE STORY:

Site matters, A LOT, and regional circumstances related to other construction projects can have a significant impact on the cost of a school construction project (i.e. never build anything at the same time as Jerry Jones).

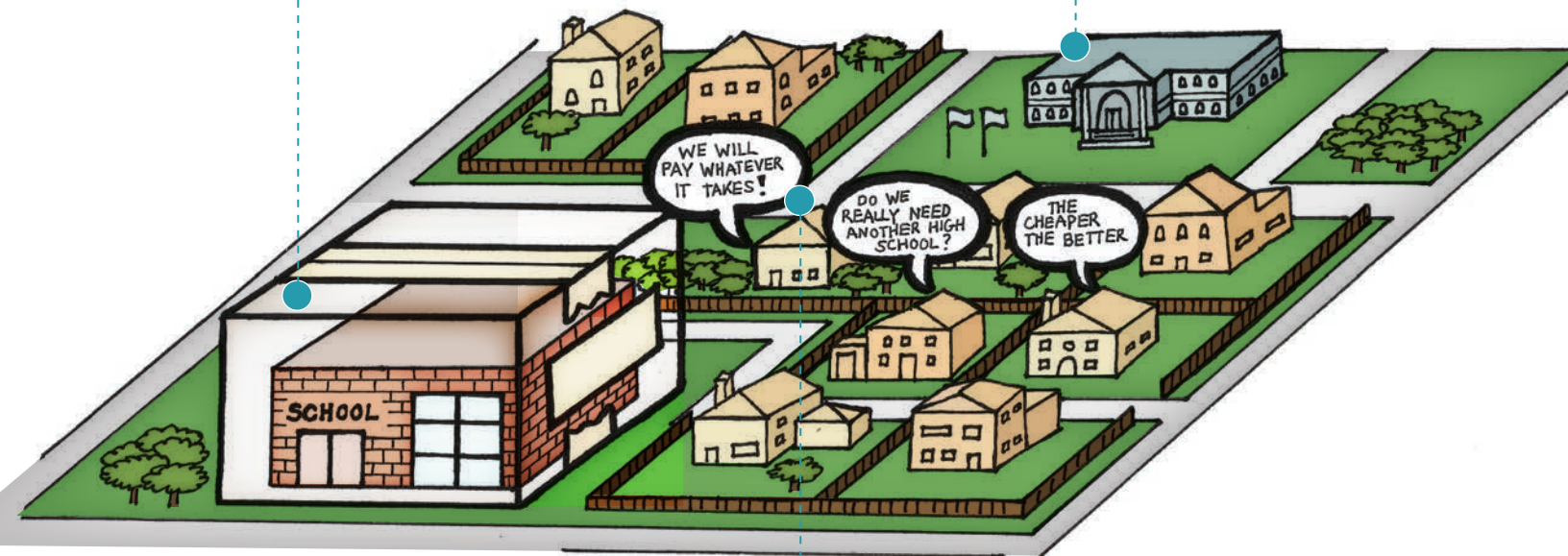
The Community Rules

The cost of construction takes into account more than just the cost of all of the combined parts. There are other factors, such as the way the project is managed, building codes, school district standards and input from the local community.

All of these factors have a significant impact on a school building's overall cost, on top of any regional issues or construction components. Let's take a closer look into three important areas.

10. PROJECT DELIVERY METHOD

11. LOCAL ORDINANCES



12. COMMUNITY VALUES

10. PROJECT DELIVERY METHOD

To put it simply, a project delivery method is the legal agreement that details how a construction project will be organized and financed. The project delivery method has an impact on cost estimating as well as the initial and final construction cost.

There are many project delivery methods, but two of them are the most common among school construction projects:

Competitive Sealed Proposals (CSP)

HOW DOES CSP WORK?

- The district selects the architect to design the project
- The district establishes qualifications for General Contractor selection
- After documents are fully complete, lump sum proposals are accepted
- Selection of General Contractor is not only based on low price, but also on qualifications such as project team, personnel, schedule and similar project experience

WHY DO DISTRICTS CHOOSE THIS?

- You can get aggressive pricing competition combined with the ability to closely scrutinize the builder's qualifications

Construction Manager at Risk (CM at Risk)

HOW DOES CM AT RISK WORK?

- The Construction Manager serves as the General Contractor, assuming the risk for construction at a concentrated price or Guaranteed Maximum Price (GMP)
- CM provides design phase services in evaluating cost, schedule, materials and alternatives
- Selection is based on criteria that combines qualifications, experience and fee

WHY DO DISTRICTS CHOOSE THIS?

- Early coordination between the architect and contractor eliminates the possibility of costly change orders during construction based on unforeseen circumstances

11. LOCAL ORDINANCES

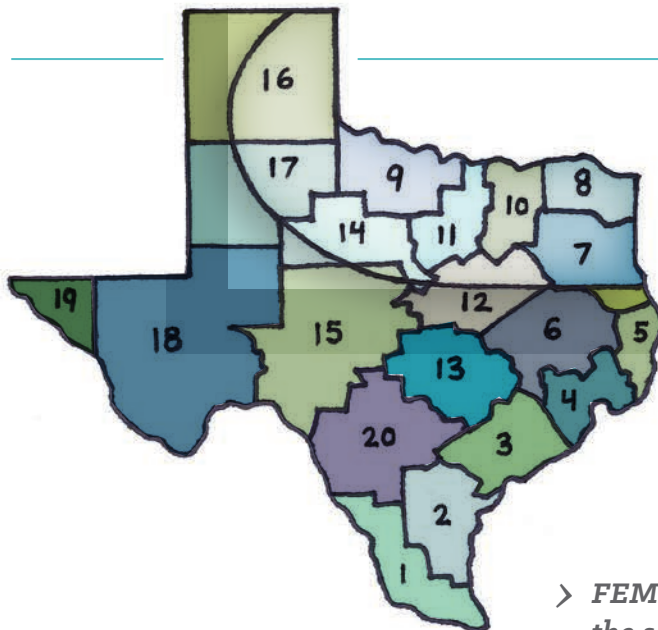
When building a new school, a public school district has multiple levels of regulations to comply with.

For any construction project, a school district must comply with:

- Municipal ordinances for all of the municipalities that fall into the school district boundaries
- County ordinances for all of the counties that fall into the school district boundaries

Complying with municipal and county ordinances may require:

- Submitting plats: surveys of land that identify boundaries
 - Having surveys done costs money
- Obtaining permits: building, trade and special permits
 - Permits cost money
- Choosing and complying with building and fire codes
 - As codes evolve, they become more stringent and are more specific about certain requirements. Therefore, complying with newer codes will assure costs for your project that could have been “interpreted differently” (ignored) with older codes.



DID YOU KNOW?

If you live in the highlighted portion of this map and your city adopts the 2015 International Building Code, building a tornado shelter in every school will be a building code requirement (not an option and not subject to interpretation).

– Benchmark Harris, Chair
The National TMS Disaster Investigation Committee

- **FEMA has concluded that, based on the scale of the school construction project, a storm shelter will result in a 5-27 percent cost increase.**

12. COMMUNITY VALUES

This report has made it clear that Texas is very diverse. No two regions are the same because there are too many types of soils, climates, topographical landscapes, scales of labor force, etc., It must now be emphasized, that the diversity of Texas is ultimately perpetuated by the different types of people that live in the state.

Due to its sheer size and geographic location, Texas sees a variety of socio-cultural and socio-economic landscapes, which means local communities in Texas are very different from one to another.

Acknowledging the differences between communities in Texas is extremely significant for any conversation regarding school buildings because it supports the following idea:

In Texas, decisions regarding public education are made by local communities. If every community in Texas is different, in one way or another, then every community will have its own needs, aspirations, expectations and goals regarding education. This means that decisions about educational programs and school buildings are going to vary considerably across the state of Texas.

➤ *Geographical Location and Scale* ➤ *Diversity of People* ➤ *Diversity of Values* ➤
Diversity of Decisions ➤ ***Lots of Different Schools***

LOTS OF DIFFERENT SCHOOLS = LOTS OF DIFFERENT CONSTRUCTION COSTS

The People Have Spoken



According to the comptroller's data, out of the 25 high schools built in Texas from 2006-2012*, the facility with the highest cost per square foot was College Station High School at \$205.51 per square foot.

College Station, Texas is not what many Texans would consider to be a big city, nor is it directly attached to a sprawling, Texas metroplex, so how did it come to be that this relatively quiet town of less than 100,000 people built a high school of this magnitude?

The answer is in the people.

One could say that the College Station community sets very high expectations for education, as many communities do. The vision statement for College Station High School is:

"College Station High School is a premier education institution in which the Cougar family of faculty, staff, parents and students are united in a passionate pursuit of excellence so that students achieve distinction by living the Cougar Qualities (Character, Outstanding Leadership, Understanding of Others, Goal-Oriented, Academic Excellence, Responsibility and Service)."

High expectations for excellence in education come with equally high expectations of the educational facilities, so residents of College Station did not hesitate to support the construction of a remarkable facility.

Every feature of College Station High School reflects the values of the community and their commitment to providing the very best for the students of CSISD.

Small Student Capacity

College Station residents purposely chose to build a new high school instead of adding onto the other existing high school in town. The thought was that keeping smaller capacities at two high schools would enrich the students' experiences by giving them twice the opportunities that they would have in one giant school. For this community, the non-monetary value of creating opportunities for students outweighed the cost that would be incurred with a new high school facility.

College Station community members actually helped CSISD create capacity standards for all types of schools in College Station. The community is committed to building as many schools as necessary to maintain small capacities at each school.

Additional Safety Provisions

The City of College Station adheres to more rigid interpretations of building codes. For local school buildings, including College Station High School, this approach results in additional fire walls, longer egress distances and other safety provisions that are not typically-required standards in other municipalities and which raise construction costs.

**within the data sample of 43 districts*

Four Story Building

College Station High School is a split-level structure with some parts of the building going up to four stories. There were three major factors that led to this design:

1. The site only consisted of a compact 65 acres (for the high school and all athletic facilities)
2. There was a substantial 35-foot drop from one end of the site to the other
3. There was a forest on the land where the high school was to be built, which required clearing

All of these reasons made building UP much more feasible than building OUT. What led to the split levels and ultimately created some areas with four stories, was the steep slope of the site. Vertical construction is typically a more expensive route, but the design was an effective solution for fitting all of the necessary buildings on the site and also keeping some of the existing trees.



Large, Open Volumes

The core spaces at College Station High School were built for a 2,400-student capacity, knowing that the current target capacity is only 1,800. This was done so that the environment would not feel cramped, but also to allow for future growth. For CSISD, the expense of creating large, open volumes was worth the physical and mental comfort that would be provided for students for decades to come.

Expansion-Friendly Building and Site Layouts

All of the core spaces at the high school are in the center of the building with instructional spaces at the wings. This layout allows for additions to be made at the ends of the academic wings without ever affecting the central core areas. The site was planned to accommodate these academic wing expansions by purposely leaving an exaggerated distance between the wings and the surrounding parking lots. CSISD chose to incur the initial cost of an extended building site for the sake of having a well-developed plan for future growth.

Impressive Crawl Spaces

College Station High School has a minimum of 6-foot tall crawl spaces under the entire footprint of the building. These crawl spaces were incorporated into the design of the high school for the purpose of adding piping and other infrastructure during future expansions or renovations. This building element may cost more up front, but the community recognizes the future pay-off it will have by preventing disruptions to students during times of growth. The crawl spaces also isolate the building from moving soils that could cause structural damage to the facility.

Extra Parking

More parking spots on a site equal higher paving costs. Regardless, out of consideration for the residential areas around the high school site, College Station High School offers more than the required amount of parking spaces for visiting teams, guests, etc.

THE MORAL OF THE STORY:

When a community speaks, the district listens. Every community has a different standard for what they expect out of their local education system and the facilities. Some are willing to spend more than others and that is okay. Community values will truly come out in the design of a school building (especially in a high school and especially if it is only the second high school for that community), so every school cannot, and should not, be measured on the same scale because every community is different.



Let's cut to the chase...

Averaging the cost of schools in Texas is ridiculous.

In addition to all of the evidence presented in this report that clearly supports this, the final consideration that we should *all* take into account is that school buildings are and *should be* unique because:

- Students have *different* ways of learning
- Communities are *different* and choose *different* ways to meet the unique needs of their students
- Some communities will invest more up front to save costs later; others choose to save more up front and pay more to maintain the building over its lifecycle. Neither decision is bad. Neither decision is “wasteful.”

In Texas, it's the *local* community that supports the *local* school district with their *local* tax dollars. That means, it's their *local* decision to build whatever type of school facility they desire.

