```
STATE OF WISCONSIN : CIRCUIT COURT : MANITOWOC COUNTY
BRANCH 1
```

STATE OF WISCONSIN,
PLAINTIFF, JURY TRIAL - DAY 5 PEREMPTORY STRIKES \&
MOTION HEARING - MANITOWOC COUNTY MOTION HEARING - CALUMET COUNTY
vs. Case No. 05 CF 381
STEVEN A. AVERY,
DEFENDANT.

DATE: FEBRUARY 9, 2007
BEFORE: Hon. Patrick L. Willis
Circuit Court Judge
APPEARANCES: KENNETH R. KRATZ
Special Prosecutor
On behalf of the State of Wisconsin.
THOMAS J. FALLON
Special Prosecutor
On behalf of the State of Wisconsin.
NORMAN A. GAHN-Present in Manitowoc only.
Special Prosecutor
On behalf of the State of Wisconsin.
DEAN A. STRANG
Attorney at Law
On behalf of the Defendant.
JEROME F. BUTING-Present in Manitowoc only.
Attorney at Law
On behalf of the Defendant.
STEVEN A. AVERY
Defendant
Appeared in person.

*     *         *             *                 *                     *                         *                             * 

TRANSCRIPT OF PROCEEDINGS

Reported by Diane Tesheneck, RPR Official Court Reporter

## I N D E X

PAGE

PROCEEDINGS IN MANITOWOC COUNTY

PEREMPTORY STRIKES
5

8

WITNESSES

TROOPER TIM AUSTIN
Direct Examination by ATTORNEY KRATZ 33
Cross-Examination by ATTORNEY STRANG 69

ARGUMENTS TO MOTION 111

THE COURT: At this time the Court calls the case of State of Wisconsin vs. Steven Avery, Case No. 05 CF 381. Will the parties state their appearances for the record, please.

ATTORNEY KRATZ: Good morning, your Honor. The State of Wisconsin appears by Calumet County District Attorney Ken Kratz appearing as lead special prosecutor in this case. Also appearing on behalf of the State is Tom Fallon, Assistant Attorney General with the Department of Justice and Norman Gahn, Assistant District Attorney from Milwaukee County, also appearing as special prosecutors.

ATTORNEY STRANG: Good morning, Steven Avery is here in person, your Honor. Jerome F. Buting represents him, to my right, and Dean A. Strang.

THE COURT: Very well, we are here this morning to complete the process of jury selection. The remaining members of the jury panel are now in the courtroom. At this time the Clerk will call the jury panel members by name and the jury bailiff will show the panel members where to be seated.

THE CLERK: Daniel Slaby, Diane Free, Terri Temme, Jacqualine Ungrodt, Cherri Haskell, Barbara

Schmidt, Sharon Thorne, Julie Dorn, Paul Nelesen, Nathan Klein, Philip Saari, Michael Stonebraker, John Lawrence, August Schuette, Marian Flint, Kevin Brotski, Richard Mahler, Tami Gosz, William Mohr, Patrick Keehan, Melvin Pedersen, Henry Gray, Nancy Stienmetz, Mary Lou Salomon, Carl Wardman, Laura Barber, Scott Defere, Donald Kickland, David Guckeisen, Patricia Piaskowski.

THE COURT: Members of the jury panel, as I explained last week, now that 30 qualified jurors have been identified, the parties will be exercising what are known as peremptory challenges. Each side, on an alternating basis, is permitted to strike seven members of the jury panel.

The 16 remaining jurors will hear the evidence in this case. At the conclusion of the trial, the names of the alternate jurors will be drawn by lot and 12 jurors will deliberate and render verdicts in this case. The parties will now begin the process of exercising their peremptory strikes. The courtroom is to remain quiet until that process has been completed.
(Peremptory strikes made.)
THE COURT: At this time the Court will read the names of the persons who have been selected
to serve on the jury in this case. When you hear your name read, please stand.

Daniel Slaby, Diane Free, Terri Temme, Barbara Schmidt, Sharon Thorne, Julie Dorn, Paul Nelesen, Nathan Klein, August Schuette, Marian Flint, Richard Mahler, William Mohr, Henry Gray, Nancy Steinmetz, Carl Wardman, Laura Barber.

Those of you who are still seated will not be serving on the jury in this case and your jury service in this matter is complete. On behalf of Manitowoc County, I want to thank you for your service. I do have one final instruction to read to you before excusing you this morning.

Your service in this case is completed. You do not have to answer questions about the case from anyone other than the Court. There is no requirement that you maintain secrecy concerning your participation in this case, but you do not have to discuss the case with anyone or answer any questions about it.

At this time the Court will ask that the jurors who are currently seated -- those of you who are standing can sit; the rest of you can stand at this time and the bailiff will escort
you to the jury room.
ATTORNEY STRANG: Your Honor, there will be a motion that should be addressed before anyone is excused.

THE COURT: Do you wish to do that in the presence of the jurors?

ATTORNEY STRANG: I do not.
THE COURT: Pardon me?
ATTORNEY STRANG: I do not.
THE COURT: Oh, okay. All right. Take them to the Branch 1 jury room on the other side. You can follow the bailiff.
(Excused jurors taken to the Branch 1 jury room.)
THE COURT: All right. As soon as the bailiff gets back we will have the other jurors retire to this room.

At this time those jurors who have been selected to serve on the jury in this case may rise and the bailiff will escort you to this jury room. They will be coming back out, Shirley. JURY BAILIFF: Okay.
(Chosen jurors taken to Branch 2 jury room.)
THE COURT: The Court will note for the record that the jurors are now in the jury room, outside of the courtroom. Mr. Strang.

ATTORNEY STRANG: Thank you, your Honor. Outside the presence of the jury now, given the demographics of those approximately 90 jurors we saw physically from the panel and the State's use of one of its seven peremptory strikes to strike Mr. Lawrence, $I$ feel bound to make a motion to reverse that State peremptory strike under -- on authority of Batsen vs. Kentucky and cases that follow.

I will make the following record as a matter of prima facie showing. The highest sequenced numbered juror whom we examined was No. 90 , by my count. Of course, there were a number of jurors struck by joint motion before we got to 90 , so we didn't see 90 human beings here.

But of those we did see over the last four days one and one only appeared to be at least partly of African/American heritage, and that was Mr. Lawrence. I noticed one other person who appeared clearly, at least to my eyes, to be not of European ancestry and that was Huang (sic) Dao, first name, $\mathrm{H}-\mathrm{u}-\mathrm{a}-\mathrm{n}-\mathrm{g}$, last name D-a-o.

Of -- Of those two people, only
Mr. Lawrence was in the final pool of 30 . As $I$
say, I can't comment, I don't know his ethnicity or his parentage, but to the eye he looks to have at least one parent of -- ultimately African heritage, describe him as a light-skinned black man with a relaxed curl for his hairdo.

The other jurors in the final 30 appear to me to be of -- what I will call European ancestry; that is, Caucasian or white-skinned, in the vernacular. So I -- I think there's a prima facie showing.

I note as well that although the Court ultimately found cause for striking Huang Dao, Mr. Huang was a juror we sought to keep and, indeed, I think I wanted him held in abeyance if nothing more. The motion to strike Mr. Dao was the State's.

Again, that's a different matter in the sense that the Court found cause. And I believe I acknowledged that, you know, there were -there was a basis for the State's motion for cause and I recognize the potential issues there.

I add that only for the full context in moving to set aside the State's use of its peremptory strike against Mr . Lawrence as a matter of due process under the Fourteenth

Amendment to the United States Constitution and the correlative provisions of Article 1 of the Wisconsin Constitution.

THE COURT: Who will be responding on behalf of the State?

ATTORNEY FALLON: I will, your Honor.
THE COURT: Mr. Fallon.
ATTORNEY FALLON: Yes. Thank you. Actually, $I$ find the motion rather stunning from counsel very accomplished as Mr. Strang. Nonetheless, I have several responses, both legal, practical, and the like.

First and foremost, the first step in any Batsen challenge is that the defendant must show that he or she is a member of a cognizable group and that the prosecutor has exercised peremptory strikes to remove members of the defendants race from the venire. So unless counsel is suggesting that Mr. Avery is of African/American descent that would be a new revelation to the State.

And even if that were the case, I would indicate for the Court that we seriously thought yesterday that we were going to move to strike Mr. Lawrence for cause. We were not -- We
weren't as quite certain as we are this morning, but we believe that Mr. Lawrence lied on his questionnaire.

In fact, if the questionnaire is to mean anything, it's a significant question. We were uncertain because we wanted to verify as best we could and we think we have, although nothing is 100 percent certain. But he, in answer to question, $I$ think it is Question 54, Have you, any members -- any family members or anyone close to you ever been a suspect and arrested for or charged with a criminal offense?

First, we thought it was Mr. Lawrence himself who had been arrested and has a pending drug offense. But it turns out there is a John O. Lawrence, Sr., age 44, whom we believe to be this juror's father, with pending offenses; in fact, he has a number of pending drug offenses.

And he indicated no. And I believe he indicated there was no contacts with law enforcement of any kind. And that caused us some great concern. We were, last evening, working on the CCAP program and trying to verify as much as we can. But we believe this John O. Lawrence, Jr. to be the son of the John O. Lawrence, Sr.
with a criminal history.
Would also indicate for the Court that another matter concerned the State and that is the youth of this man. And, obviously, at the young age of 20 , it's very hard for someone of that age to distinguish themselves in the community, but he did not impress us with a significant work history, for any of that to suggest to us that he had a claim or a sufficient stake in the community relative to the deliberation process.

But primarily, we are under the impression, based upon our information, that he was not truthful in his questionnaire and, quite frankly, he should have been struck for cause. We wanted to do our best to try to verify as best we can. Lots of phone calls late into last night. And we believe that he is, in fact, related, as best we can, given the name and same middle initial and the junior and what have you.

As a result of which, so we have a legal basis, this is not a Batsen issue. Two, we have a juror who we believe lied. And three, we have the demographics of he did not distinguish himself; he did not look to us like he would be a
responsible dedicated juror, not withstanding the responses he gave. And those are our reasons. Hold on. Is there a concession that Mr. Avery is not a member of the cognizable class?

ATTORNEY STRANG: Mr. Avery, is not African/American. And it has been established since 1990 or 1991, by the United States Supreme Court, in Powers v. Ohio, that one need not be a member of the same ethnic group or other cognizable class as the struck juror to raise a Batsen challenge; Powers vs. Ohio, United States Supreme Court, if my memory serves even closely.

So I think that lays to rest entirely the first defense the State offers, which is the legal one. As to the factual defense, the jury questionnaires will be part of the record, but I recall nothing in which Mr . Lawrence offered his middle initial or his middle name.

Now, whether there's a John O. Lawrence, Sr., who is in fact his father, I don't know. My recollection is the juror made a comment about not knowing much about his father or not having much contact. And I don't really -- don't remember exactly what he said and I could be a mile wide there. But the transcript would --
would bear that out. I do recall him listing Jr. on his questionnaire. I do not recall a middle initial.

THE COURT: All right. The Court does not have the Batsen test committed to memory; it's not something that gets raised very often. Mr. Fallon.

ATTORNEY FALLON: Well, there is a recent Wisconsin Supreme Court case. I'm aware of Powers. There is a 2003 Wisconsin Supreme Court case State vs. Lamon, $L-a-m-o-n$, setting forth the three step process, as well, that could be examined.

THE COURT: All right. I'm going to take a short recess. And then we'll go back on the record.

Before I do that, let me ask, as long as we're on the record, something I meant to ask earlier: Subject to the objection raised by the defense, are the 16 jurors that the Court has identified, the jury that each party selected based on their peremptory strikes.

ATTORNEY FALLON: I believe the panel left reflects the -- accurately those which were struck by the State.

ATTORNEY STRANG: So do I.
THE COURT: Thank you.
(Brief recess taken.)

THE COURT: At this time we are back on the record outside the presence of both the at least tentatively excused jurors and the jurors who have been tentatively selected to serve on the jury panel. The defense has made a motion challenging the State's decision to exercise one peremptory challenge for the purpose of removing a juror who appears to be of a minority race in this case.

I'm not sure that that fact is disputed; that is, I believe that both parties recognize Mr. Lawrence would fall into the category of somewhat of a minority race.

ATTORNEY STRANG: And I -- I think so, but I also -- I was going to add one further factual agreement that we were able to come to, I think, during the break. I think when we went back and checked, Mr. Lawrence did not list his middle initial on his handwritten questionnaire, but the middle initial O. is listed on the computer printed voir dire list in its various sorts from the Court. That's -- the one the parties have is dated January 26, 2007.

So the name as given on the questionnaire is John Lawrence, Jr. The name on the computer voir dire list is John O. Lawrence,
without a Jr. or Sr. designation and that's at least agreed on the defense part.

THE COURT: All right. The first issue is whether or not a defendant wishing to raise a Batsen challenge has to be a member of a minority class himself in order to do so. Based on the Court's reading of the case law, specifically, the Powers case, to which the Court was referred and which is actually cited in a footnote in the Lamon case at page 762, where the Wisconsin Supreme Court recognizes that a defendant of whatever race is entitled to a jury selected without discrimination by the authority of Powers.

So I don't believe the fact that Mr. Avery himself may not be a minority -- may not be a member of a minority race is sufficient to preclude the defendant raising a Batsen challenge to the dismissal of Mr. -- or the striking of Mr. Lawrence in this case. The Court believes, then, that it is required to apply the Batsen analysis to this case.

The first step of a defendant raising a Batsen challenge is to make a prima facie showing that the prosecution has exercised a peremptory challenge on the basis of race. As I indicated a
minute ago, I don't believe that there's a dispute in this case that that part of the test has been met. Mr. Lawrence appears to be the only remaining minority member on the panel. And the State did exercise a peremptory challenge to remove him from the panel.

The next part of the test goes on to provide that if the defendant satisfies this threshold, the burden then shifts to the prosecution to articulate a race neutral justification for the disputed challenges, or in this case, the challenge. In this case, the State has offered two explanations, as I understand it, for the removal.

The first one and the primary one is that the State believes that the juror was not truthful on the juror questionnaire, specifically Question 54 relating to whether or not -Actually, I don't have a questionnaire in front of me; can somebody read me, for the record, the exact question?

ATTORNEY FALLON: Sure. Have you, any family members, or anyone close to you ever been a suspect in, arrested for, or charged with a criminal offense? He checked no.

THE COURT: Okay. So the question required the juror to indicate not only whether the juror himself fell into that category, but whether or not any family member fell into that category. The prosecutor, Mr. Fallon, indicates that the defendant -- or the juror answered that question no. That is not disputed.

It does also not appear to be disputed that a gentleman with the same name, except Sr., as the juror in this case who is identified as Jr. on his questionnaire, has a record of a number of convictions, in addition to a pending charge at this time. The State indicated that they attempted to conclusively determine whether or not the John Lawrence with the criminal record was John Lawrence, Jr.'s father.

The age appears to match. And we now know that the middle initial also appears to match. The fact that one is a Sr . and one is a Jr. adds additional support to the argument that it appears he may well be the father.

And because of that fact, the State argues it had a valid reason to -- non-race related to exercise a strike against Mr. Lawrence. The State also argues that, based
on his young age and lack of employment that his commitment to the community may also be an issue in this case. So the Court is satisfied that the State has articulated a legitimate race neutral reason for challenging Mr. Lawrence.

The application of the third part of the test was a point of dispute in Lamon. There were some dissents in that case, or least one that I know for sure, by the Chief Justice. And I attempted, during the break, to review not only the majority decision, but the dissent as well. And the Court is satisfied that under the approach of either the majority or the dissent in Lamon, that the State in this case has met its burden.

Specifically, I believe that while there is not conclusive evidence, or the State did not come up with conclusive evidence, it came up with some fairly compelling evidence to strongly suggest that the juror in this case was the -- or is the son of the John Lawrence, Sr. who has the criminal record and that the answer given by the juror may well not have been truthful. The Court cannot say conclusively it was not truthful, but there was certainly a good faith reason for
coming to that conclusion that is not related to the race of the juror.

Part of the test outlined by the dissent, which would apply -- require courts to engage in more thorough analysis or a stricter test, however you like to phrase it, indicates that the part of the Court's duty is to assess the credibility of the prosecutor and the reasons given for the striking of the juror.

In this case, I can find nothing, based on what the Court recalls to be the demeanor of the State in questioning the juror, or the reason given for the strike, that would suggest that anything was motivated by race. I believe that the reasons given by the State, under the totality of the circumstances, and I'm not really aware of any other circumstances that would call their decision into question here.

While it's true that under the Powers decision the -- a defendant who's not even a minority can raise the challenge, it's a little difficult to see, applying the totality of the circumstances, why the race of the juror in this case would have any special significance. There is no reason why, to the extent a minority juror
would be more sympathetic to a minority defendant, that that would be a reason -- an improper reason for the State to attempt to remove him from the jury. We don't have a minority defendant here.

But I'm certainly not basing my decision entirely on that. As I recognize -- or as the case law dictates, the defense can raise the issue here. But to the Court, it adds additional credibility to the State's argument that it made the request it did, or made the decision it did, on a race neutral basis.

I believe in the State's argument it emphasized the criminal record element of the father more than the second reason, but that's an additional reason which the State could have used. I'm focusing more in my decision on the reasonable grounds to suspect untruthfulness on the questionnaire.

So, the Court will deny the defense motion in this case. With that, is there anything else either party wishes to raise before bringing the jurors back?

ATTORNEY BUTING: Judge, just -- just one thing, real quickly, I want to put on record. In
speaking with Mr. Gahn today, it appears there may be some confusion over what the Court's order on the test -- the test of the samples for this EDTA, or whatever. My understanding was that the State would preserve sufficient sample of the vial of blood for any defense testing and that we would get sufficient sample of the actual RAV 4 stains that were being tested by the FBI.

Mr. Gahn was under the impression that any other stains in the RAV 4 that had not been tested or that would be -- would satisfy that part of it. I just want to put on the record that I disagree with that. I think the defense needs to have half of the actual stains that are being tested -- actual stains from the RAV 4 that are being tested and about which any opinion might be given by the FBI.

And I believe that was what we discussed in court. It's not clear in the hand -- or the written order, which was handed to me in the middle of jury selection, but I think that's what we anticipated.

THE COURT: Mr. Gahn.
ATTORNEY GAHN: I will just state that I don't know if I'm disagreeing with Mr. Buting at
this point or not. All $I$ know is that $I$ do recall that we talked about splitting the blood vial evidence. But there are five blood stains from the RAV 4.

Three of them were -- And of those 5, DNA testing was done and each of the five showed to be the blood of Steven Avery. Three of those five have been sent to the FBI. The FBI may be taking one of those and I will find that out hopefully before noon. They may be consuming one of them. They don't know.

But I do know that my understanding of the order was we would preserve sufficient sample of blood stains from the RAV 4. I know for sure we have got four that are preserved. Whether one of them maybe consumed, that's kind of up to the tester. So I, whatever, if it is, then I will ask them to find a larger stain, see if we can cut it in half and then $I$ will ask them to test that one too. I mean, I don't know if there is disagreement here yet or not.

THE COURT: The focus at the argument was on splitting the blood vial sample; $I$ recall that. ATTORNEY GAHN: Right. THE COURT: I -- All I will say is, I think
it's important if this line of examination is pursued, for the defense to also have an opportunity to perform testing on blood that was found in the vehicle. Sitting here as the judge and not an expert in the analysis of blood, I'm not going to be issuing orders about whether or not a blood stain can be split -- a particular blood stain can be split because, frankly, $I$ don't know if that's scientifically possible.

The Court's ultimate concern would be the element of fairness. And I think its important that in some scientific fashion that both parties get a chance to analyze the blood sample in the car to the extent that's feasible.

ATTORNEY BUTING: Well, Judge, I just want to be very clear on the record, because it is my understanding and I think it was clear before, that in order for fairness to be preserved here, we -- it is not enough to say we get some other sample. We need half of these stains that the FBI is going to be testing, because the EDTA levels will vary depending upon where in the car, what the substrate is, fabric, medal, whatever. And that was a big issue in the Cooper case and so that's why I want to make sure that that's clear that that's a concern
for us here.
THE COURT: All right. Let's do this. Mr. Gahn, you check with your folks at the FBI and see if it's feasible to split a sample of a stain or stains in the vehicle. If the parties still have an agreement, you can come back to court, but I just don't feel I have enough information in front of me to address a difference of opinion if there is one.

Is there anything else before we bring back the jurors who have been selected? And I take it, that based on the Court's decision denying the defendant's Batsen motion, the jurors who are not selected can now be released?

ATTORNEY STRANG: Yes.
THE COURT: Okay. Very well. Janet, can you have them bring in the jurors? You can let Linda know the other jurors can be released.

THE CLERK: They are not going to be in any order.

THE COURT: They don't have to, we can put 14 in the box and then the extra two in front.
(Wherein the jury panel was brought in.)
THE COURT: You may be seated. Members of the jury panel, and I'm going to address you that way because you have not been sworn as jurors yet,
that will happen on Monday. I will be giving you some preliminary instructions on Monday and one of them will include what you just experienced, which is, from time to time the jurors may be excused from the courtroom for the Court to hear arguments from the parties.

For purposes of this morning's proceedings, in just a minute the Court is going to excuse you for the day. But while you are back in the jury room you will be receiving instructions concerning transportation arrangements for Monday, when the trial is scheduled to begin. If you have any questions concerning any of those arrangements, please pass them on to the bailiff. And if necessary, they will be addressed by the Court.

Before I excuse you today, I want to again stress that you are to make certain that you have no exposure to any media coverage of the trial until you reach your verdicts in this case. As I have previously informed you, the jury will not be sequestered during this trial, but that decision is dependent on your commitment that you will not listen to, watch, or read any news accounts of the case during trial, nor discuss
the case with anyone, including members of your family or other jurors.

For these reasons, I'm going to order that for the duration of the trial, you simply not watch the local news on television. Do not listen to the local news on the radio. And do not read the newspaper unless you first have someone remove any articles about this case from the paper. That is of vital importance.

In addition, and I think one of the jurors brought this up in voir dire, using the mute button should a promo or something come on TV while you are watching another show or anything regarding this case. Please take those type of steps to consciously avoid any exposure to the case that may inadvertently be presented to you during the course of the trial.

If you are inadvertently exposed to any information about this case during the trial, please notify the jury bailiff. At this time, I'm going to excuse you for today, subject to the transportation instructions you will be receiving shortly.

ATTORNEY FALLON: Your Honor, one other reminder about the internet access as well.

THE COURT: Oh, I did not include internet access, but that would also be exposure to the case which is prohibited. Do not look on the internet for any information about this case. Thank you, Mr. Fallon.
(Jury panel not present.)
THE COURT: Counsel, is there anything else before we adjourn to Chilton this afternoon.

ATTORNEY STRANG: One brief thing, which is, given how long this ran this morning, I'm wondering if we could push back to 1:30 this afternoon; $I$ have to get the materials for that hearing back in Appleton.

THE COURT: Okay. I do have one request; do the parties have any idea how long they think the proceedings may take this afternoon? I know -- I assume there's going to be -- or I was led to believe there would be some evidence regarding the motion about the materials the State wishes to present during the opening.

ATTORNEY KRATZ: That's the smallest part, Judge, the admissibility hearing on the demonstrative evidence. And Mr. Austin from the State Patrol will be available for live testimony in that regard.

We do have some other matters that -both as to opening statements and some other evidentiary matters. With -- with my best guess, Judge, we should be out of there by, if we start at $1: 30$, by $3: 30$ or $4: 00$, if that would please the Court.

ATTORNEY STRANG: I'm guessing a little bit longer. I would have guessed the computer generated animation hearing, between testimony and argument might go an hour and a half or even two, conceivably. And there will be some substantial discussion on the preliminary jury instructions.

And I will try to catch up with counsel for the State before -- if I can, before we get to that, just to see whether there's areas of agreement on the substantive part of the preliminary jury instructions.

THE COURT: Okay. All right. We'll see you at 1:30 in Chilton.
(Noon recess.)
(Proceedings reconvened at Calumet County Courthouse.)
THE COURT: At this time the Court calls State of Wisconsin vs. Steven Avery, it's Case No. 05 CF 381. This matter is scheduled for a motion hearing this afternoon. Will the parties state
their appearances for the record, please.
ATTORNEY KRATZ: State appears by Calumet County District Attorney Ken Kratz, also by Tom Fallon with the Department of Justice.

ATTORNEY STRANG: Good afternoon. Steven Avery in person and Dean Strang on his behalf. THE COURT: All right. And we're here this afternoon I believe, first, to hear a motion filed by the defendant to exclude the use of computer generated animations in the State's opening statement, for purposes of today; is that correct? ATTORNEY KRATZ: Judge, the issue is the admissibility of the animations, generally. There is a second issue that needs to be decided regarding images that would be used in opening statements both by the State and the defense. They are related in a sense, but the admissibility hearing regarding the demonstrative evidence generally, and the computer generated scene images, as well as animation, specifically, will need to be ruled on by the Court this afternoon.

THE COURT: All right. Mr. Strang, it's your motion $I$ will let you add to that if you wish. ATTORNEY STRANG: Well, I agree with Mr. Kratz and, indeed, it is simpler than that.

What we ought to deal with is just the admissibility of the computer generated animations. Because if, or to the extent they are admissible, then, of course, there is no objection to Mr. Kratz using images from them in his opening statement.

I say of course, I mean, I guess that doesn't necessarily follow, but it is a fact here that if the underlying animations are admissible, I don't have a quarrel with him using a few slides from them in his opening statement. And he already has shown me those that he wishes to use.

ATTORNEY KRATZ: I'm sorry, Judge, just to complete that point, there is the more global question, though, if there are any other objections to images that $I$ have proposed in openings, I just simply wanted to make a record of that before Monday, otherwise we're ready to proceed.

THE COURT: All right. You may proceed.
ATTORNEY KRATZ: Judge, I have heard at least from one member of my staff that at least the Court's microphone isn't picking up very well in the house. This is probably a good opportunity to set volume levels and the like. We can do that during the hearing, of course, but $I$ at least wanted to
alert the Court that it's a little quiet, at least for the house, the people behind us, not being able to hear very much.

THE COURT: My recollection is that somewhere there is a remote control device around here that allows me to control the volume, but I'm not sure where it is.

SHERIFF PAGEL: One should be yours, two, the clerks, three is the -- four and five should be --

ATTORNEY KRATZ: One is the bench.
THE COURT: Number one is the bench.
ATTORNEY KRATZ: That's much better already.

THE COURT: Is that satisfactory?
ATTORNEY KRATZ: Perfect.
THE COURT: Wonderful.
ATTORNEY KRATZ: Thank you, Judge. The State will call Tim Austin to the stand.

ATTORNEY STRANG: While Mr. Kratz is setting up, there was an issue Mr . Fallon suggested, which is keeping media cameras off of the laptop screens of counsel for both sides. I don't know if that's already covered by the media order or if we need to address it.

THE COURT: I don't have a copy of the media order in front of me, but I know it referred to materials that counsel use on their table. And I will indicate today that if the order as written does not specify images on laptop computers it's meant to apply to all materials on the table, and that specifically includes laptop computers.

ATTORNEY KRATZ: Tim.
THE CLERK: Raise your right hand.
TROOPER TIMOTHY AUSTIN, called as a witness herein, having been first duly sworn, was examined and testified as follows:

THE CLERK: Please be seated. Please state your name and spell your last name for the record.

THE WITNESS: My name is Timothy Austin, A-u-s-t-i-n.

ATTORNEY KRATZ: Mr. Austin, if you could pull the microphone down towards you. Would you once again state your name for the record.

THE WITNESS: Yes, sir. My name is Timothy Austin.

## DIRECT EXAMINATION

BY ATTORNEY KRATZ:
Q. Mr. Austin, how are you employed?
A. I'm employed as a trooper with the Wisconsin

State Patrol.
Q. How long have you been a state trooper?
A. I have been with the patrol since July of 1996, about $101 / 2$ years.
Q. And do you have any specific responsibilities with the State patrol?
A. Yes, I'm assigned to the Wisconsin State Patrol Academy, to the Technical Reconstruction Unit.
Q. Mr. Austin, have you brought with you here a document which is known as a curriculum vitae?
A. Yes, sir, I have.
Q. And for lack of a better term, is the common knowledge of this kind of a document called a resume, or something like that?
A. Yes, they are. Essentially outlines my training and experience in the field of reconstruction activities.
Q. I have handed you what's been marked for identification as Exhibit No. 1; could you tell us what that is, please?
A. Yes, sir, this is the document you referred to. It's my curriculum vitae that goes over my education, training, certification.
Q. And at least for purposes of this hearing, if you could just briefly indicate whether or not you
have a specific education, training, and experience that permits you, on behalf of the State Patrol, to create images for use not only for investigative purposes, but for use in court proceedings?
A. Yes, sir. I hold certification as an instructor in the field of forensic mapping and the use of Total Station technology for collecting measurements at scenes.
Q. Mr. Austin, in this case, were you asked on behalf of the State of Wisconsin to assist in creation of images at or near a property known as the Avery Salvage Yard?
A. Yes, sir. I was contacted to provide forensic mapping services ultimately leading to the creation of scale diagrams and three dimensional models.
Q. When did you first become involved in this case?
A. Without referencing my notes, I believe it was November 5th, 2005.
Q. The same day that the law enforcement personnel took control of the Avery property, executed search warrants, and otherwise began their search efforts; is that right?
A. Yes, sir. That's correct. It was late in the
afternoon on that day when $I$ was contacted.
Q. Mr. Austin, did you then spend time on the Avery salvage property itself and did you in fact take some measurements and perform other duties which allowed you to create these images?
A. Yes, sir. For the next approximately seven days, myself and a team of law officers forensically mapped and measured the entire Avery Salvage Yard property.
Q. To assist the Court and counsel in providing your testimony today, I'm going to have you refer to the image that has been portrayed on the screen. Can you tell us what we're looking at, please?
A. What you are looking at is an aerial photograph that I believe was taken by State Patrol Pilot, Trooper Dennis McConnell. It shows the Avery salvage yard property referred to before and some of the surrounding properties and landscape.
Q. Now, so the Court understands where some of these images are going to be coming from, you provided counsel, that is the prosecution and the defense, as well as a copy for the Court, of some figures or images that ultimately have made it's way into a binder of yours; is that correct?
A. Yes, sir, that's correct. This is one of many
images that $I$ put in a document entitled a Forensic Mapping and Scenery Construction Report.
Q. To complete the record, Mr. Austin, I have handed you what's been marked as Exhibit No. 2. Can you tell us what that is, please.
A. Exhibit 2 is a DVD containing my narrative report, digital photographs taken by myself and other State Patrol Officers, and other logs documented by the State Patrol. Essentially, the binder I described before is what's on this DVD.
Q. All right. Did you bring that binder with you?
A. Yes, sir, I have a black and white copy.
Q. Can you just hold it up for us and show us what you are talking about.
A. This binder here is the one I'm referring to.
Q. So Exhibit No. 2 is a electronic version of all the information that's included in that binder. And again, the relevant portions, other than some of the measurements and the like, but at least the figures that you will be referring to have all been provided to counsel and the Court; is that your understanding?
A. Yes, sir, that's correct.

ATTORNEY KRATZ: Okay. Just to - so that I don't forget, more than anything else, Judge, I am
going to move for the admission of Exhibits 1 and 2 at this time?

ATTORNEY STRANG: No objection.
THE COURT: All right. Those exhibits are admitted. I have one question, has -- or maybe it's still coming -- has the image that we're looking at on the screen been identified in some fashion yet?

AtTORNEY KRATZ: It has not, Judge. It is about to be.

THE COURT: Very well. Go ahead.
ATTORNEY KRATZ: Mr. Strang indicates, Judge, that my mike should be up a little bit as well as Mr. Austin's. This is probably the time -SHERIFF PAGEL: I think three would be for Mr. Austin.

THE COURT: And State should be 4 or 5 . ATTORNEY KRATZ: Mine says mike 4 underneath, Judge.

ATTORNEY STRANG: Mine is mike 5.
THE COURT: I'm hearing some type of buzzing periodically. I don't know if it's coming over the sound system or where, but if it's not bothering the parties, we'll proceed.

ATTORNEY KRATZ: I think what happens, Judge, with this sound system, when you talk, as you
might know, our microphones cut out. When the Court talks, they don't want anybody else talking at that time, which is probably a good idea. But I think the system then picks up yours, if we overlap a little bit. And I think that's what's causing that, but we'll move forward.
Q. (By Attorney Kratz)~ Mr. Austin, are you able then to -- With the image that we're referring to here, are you able to find that figure and could you please identify that in your materials?
A. Yes, sir. May I reference my binder?
Q. Please do.
A. If I may, sir.
Q. Go ahead.
A. That photograph is Figure 3, which appears on Page 10 of my narrative report.
Q. So at that scene that you have identified as the Avery salvage property, then, I think you began telling us that you took some measurements. Can you tell us about that.
A. Yes, sir. The bulk of the measurements were taken using an electronic device called a Total Station, that's made by a company called Geodimeter?
Q. Can you spell that for us.
A. Yes, sir, G-e-o-d-i-m-e-t-e-r.
Q. What is Total Station?
A. Total Station essentially is an electronic device. It measures distance and angles to document an objects position in 3D space, basically measures along an $X, Y, Z$ access on $a$ standard coordinate system.
Q. What is Total Station typically used for in your line of work, if you understand what I'm asking you?
A. The Total Station, we utilize that in the reconstruction unit for taking measurements at both crash and crime scenes.
Q. You mentioned that Total Station assists in taking measurements, can you very briefly tell us how that occurs.
A. Are you asking me how the instrument works, or how it records measurements?
Q. Sure.
A. Essentially, the instrument locates itself, if you will, in 3D space. And then, if I'm taking a measurement to you, Mr. Kratz, the instrument recognizes that it's going say -- turning 90 degrees towards you, an elevation of maybe down two degrees. The instrument recognizes that
change in elevation or change in angle and then assigns or calculates what your coordinates would be in relationship to me.
Q. I see. So, it isn't just simply a tape measure, me to you, that would be one access, if you will, but it's actually a three dimensional measurement that is being taken; is that correct?
A. Yes, sir, that's correct.
Q. So, in lay terms, is that even more accurate than a tape measurer or a one dimensional measuring device?
A. When you look at adding in the operator factor, if you will, yes, the Total Station is going to be more accurate than if we had strung out, you know, a thousand foot of tape at the Avery salvage lot.
Q. All right. How many days were you involved in taking measurements at the Avery property?
A. May I, again, reference my notes.
Q. Sure.

ATTORNEY STRANG: The witness ought to feel
free to look at whatever he needs, whenever he needs.

THE COURT: Very well.
THE WITNESS: Thank you, sir.
A. We began the mapping on November 5th and finished the mapping at the Avery property on November 12th.
Q. So that was really the entire time that law enforcement had control of the property; is that right?
A. Yes, sir.
Q. You mentioned that during that time frame you were involved in taking these measurements individually. How many of those days were you personally out there, if you remember?
A. I believe that I was there for six of those seven days.
Q. And during that time, Trooper Austin, do you know how many individual measurements were taken through and by use of this Total Station process?
A. Yes, sir, there were over 4100 measurements taken at the Avery Salvage Yard.
Q. I assume, based upon what you know of Total

Station and your use and the certifications for that piece of equipment, you have an opinion as to its accuracy?
A. Yes, sir. My opinion is that Total Station is obviously very accurate. In fact, the maximum induced error that an instrument gives us is only
about three seconds.
To explain, a circle is divided into 360 degrees. Each degree is divided into 60 minutes. Each minute is divided into 60 seconds. The Total Station is accurate to within three seconds.

Essentially, in this particular case, our longest shot is about 1200 feet. That comes out to be an accuracy of about less than half an inch.
Q. After the measurements are obtained by you, and after the data is compiled, could you tell me the first step in the creation of images. And let's first talk about two dimensional images.
A. Certainly. The Total Station stores it's data internally in its on board data collector. We download the data from the Total Station and we bring it into a computer aided drawing program. In this case, we used a software program called CAD Zone to begin processing that information.
Q. I'm going to, once again, direct your attention to the in-house screen. We have to come up with a better name for that as we go through the trial. If you could tell me what figure we're looking at here and if this is an image that may
better describe a two dimensional drawing or representation that's created.
A. Yes, the particular picture, if you will, you have on the board is Figure 4 from my narrative report. What this shows is the two dimensional view, meaning it is straight or completely orthogonal, looking straight down on this portion of the Avery Salvage Yard?
Q. I'm sorry, do you have a laser pointer with you?
A. No, sir, I do not.
Q. I'm going to give you mine.
A. Thank you.
Q. Trooper Austin, please feel free to use that as you are describing things so we can better understand what you are talking about. Go ahead.
A. Sir, if I -- if I may, do you have Figure 5? It might be easier to help explain this.
Q. I'm sure I have everything.
A. What I have asked you to do is essentially zoom out and look at the entire Avery property that was diagrammed and mapped. The portion you showed us before, which was Figure 4, is a closeup of this upper northeast corner, which is the primary business buildings, if you will, for the Avery Salvage Yard.

So if you want to go back to Figure 4, at least we know now what portion of the main diagram it is from. So, now, we essentially zoom in on that northeast corner and we can see this would be the main road coming in. This is a gravel driveway, if you will, that runs east and west.

Here is a storage building, the main shop, and here's a private residence. So we have taken a small portion of that area that was mapped and, now, looking at our diagram, straight from above, looking down at a specific corner of it.
Q. Now, diagrams like this, two dimensional diagrams, is that what are commonly used in trials or when there are triers of fact, to help juries or judges understand evidence?
A. Yes, sir. We very commonly use two dimensional diagrams such as this to help show the scene or show where objects are or distances of particular items.
Q. Although this is much nicer, the concept really isn't any different than a blackboard or a chalkboard that might be used to help describe, or help understand some evidence; is that fair?
A. As technology has evolved, we have moved from the chalkboard, to the easel, to two dimensional diagrams. And as technology continues to improve, we're going to move ahead also.
Q. Let's move ahead today, then. After your two dimensional images are created, are you able to, then, with the Total Station and the measurements that are gained therefrom, create three dimensional modeling?
A. What I discussed, the Total Station, a few questions ago, I mentioned that the Total Station measures in 3D space. That's the $X$ coordinate, $Y$ coordinate, and now the $Z$ coordinate, which gives us height or elevation to objects.

So we have the information there, just that we now bring that data into a second computer program. This one is called forensic 3D, which allows us to draw or create diagrams in 3D space, so we can add that height, elevation element to objects.
Q. I'm going to, once again, direct your attention to the screen, ask if you can tell us what this figure is, what it shows, and how it helps explain your process?
A. This is Figure 8 from my narrative report. It's
on Page 14. This shows an unrendered three dimensional image. When I say unrendered, what I mean is, it does not have any textures applied to three dimensional surfaces. As you can see, our garage building, our vehicles are white. They essentially haven't been painted, if you will. I haven't applied any type of textures to those objects.
Q. The application of the texture, then, how is that process created?
A. In many cases, the software will allow us to take a photograph of a particular texture. What I mean by that, if $I$ was diagramming this desk, $I$ could take a photograph of the wood and paste that wood, that photo of the wood, on the model. In this case, in this particular garage, we photographed the siding on that garage so that we could apply it to our three dimensional model.
Q. And so you aren't only guessing at what the different colors and the different textures of objects are, but you take them from images that you retrieve from the property; is that right?
A. In most cases. I don't like the word guessing, because there are some that I did apply textures from a personal library. For example, the paint
on the truck, I did not photograph the paint on that particular truck. I applied a general black car paint texture to it. What we do see on the garage --
Q. By the way, what figure are you referring to now?
A. I'm sorry, this is Figure 9. It's the same image; however, it has now been rendered in the software. Again, what we do see here, however, is that texture mapping process on the garage building.
Q. Your three dimensional modeling, could you describe, not just in this case, but in other cases that you have been asked to testify and other cases that your colleagues have been asked to testify, what is the advantage of 3 D modeling versus the two dimensional images that we saw, as a jury or a trier of fact may consider?
A. When we look at two dimensional image, again, we're just looking straight down on that particular area. What's difficult for us to appreciate, any type of spacial relationship or geometric perspective, if you will.

In other words, we don't know, or it's more difficult to actually visualize how that scene looked, or how objects are related to each
other. When we now take that into a three dimensional model, we can get a better understanding of how that scene looked or how objects are, again, in relationship to each other.
Q. All right. You were asked, then, by the State, by the prosecution, to take these 4100 plus measurements, all of the data, including all the photographs that you both obtained, and viewed, and created some modeling for us; is that right?
A. Yes, sir. I have to add, though, we did not model the entire Avery property in 3D.
Q. Why not?
A. I think I would still be working on it today if $I$ modeled that in 3D.
Q. All right.
A. Also, the work that $I$ did was under the direct supervision of the lead investigators or yourself. And it was determined that we probably really don't need the entire property done in three dimensions.
Q. Now, because this is a adversary system, in other words, because there's the defense, and the prosecution, is it typical for one side or another to ask you or direct you to create images
for use at trial?
A. Yes, when you look at the work that I did, and I know we're going to get deeper into this, but there are evidentiary areas that I don't necessarily know about. And I need that guidance, for persons to tell me what is important, and what is not important, in a diagram.

It's very typical for one side to tell me what they would like to see. Many of these exhibits I designed to assist others, in explaining to you, or to a jury, what it is that they did out there at the scene.
Q. Let me just talk about that just briefly. So, other than you showing, if you will, or being able to show the jury the scene itself, did we ask you to provide or create these images to allow investigators or law enforcement officers that found evidence, or even other experts, to use those images to better explain or describe the evidence that they may have found, or their testimony.
A. Yes, sir. It's one thing to be able to, if you will, sit in this box and verbally explain where something was positioned. But to be able to
physically show that geometric relationship; in other words, where it is compared to other objects, helps persons to better understand where these items are located, where they are in relationship to other items.
Q. Let's talk about some interiors first, all right. And you were asked to do some modeling, not just in the yard itself, or in the exterior -- or is it easier to talk about exteriors first?
A. It's your option, sir.
Q. Doesn't matter to you, I'm sure. All right. Let's talk about some interiors. I'm going to show you Figure No. 31. Let's talk about what we're looking at here, first.
A. Sir, this is Figure 31, found on Page 32 of my narrative report. What we're looking at here is an overview of a residence that was on the salvage yard property. And what I have done with this particular model is, I have hidden the roof. In other words, if the roof is a layer, I turned the roof off, so that we can see all of the rooms together.
Q. Let me just stop you there. I'm sure Mr. Strang and I at some point will establish the foundation, but Exhibit 31, we're looking at

Steven Avery's residence?
A. Yes, sir.
Q. All right. Go ahead.
A. Again, what $I$ have done is taken the roof off, or rather, hidden the roof from the model so that we can look at all the various rooms that are inside of his residence. If you think of -- remember the old overhead projectors, you could lay one piece of plastic over it, and another, and another, essentially we have taken one off so that we can see what's underneath the roof in this case.
Q. Now, Figure No. 31 is an unlabeled, or a clean, if you will, image. Were you also asked, and did you provide labels, if the Court allows, and if the State, or whatever party actually wishes to present them, believes it would be helpful for the jury?
A. I provided you with two separate images, one being unlabeled, which we just saw on the screen, and I also provided you with one having labels, in other words, there's text and leader arrows identifying various rooms.
Q. What are we looking at now?
A. This is the image I just described. It is the
same one you had previously; however, this one has text and leader arrows identifying various rooms in the residence.
Q. And through all the images -- in fact, I'm going to have you look at, I think it's Exhibit No. 4. You have a packet of images up there, could you tell us what Exhibit 4 is.
A. Yes, sir, I believe these are those images that $I$ provided you with. They are 4 by 6 prints of these rendered models. And there should be label versions and unlabeled versions in these envelopes.
Q. And for assistance of the Court and really trying to anticipate what the Court's direction may be, to me, to the State, in use of some of these images, you have created a hard copy, or a set of all of your figures, both labeled and unlabeled, so that a record can be made, that is, if some of the documents -- some of the images might be introduced and some may not, we're able to just put in the ones that are acceptable to the Court, and perhaps to counsel, as well; is that right?
A. Yes, sir, that's correct.

ATTORNEY KRATZ: Just to complete the record, Judge, although we will have originals, the
entire packet which has been provided to the Court in a 8 1/2 by 11 form, all those images are in Exhibit No. 4. I would ask the Court receive those for purposes of the record at this time.

THE COURT: Any objection?
ATTORNEY STRANG: None.
THE COURT: Those are received.
Q. (By Attorney Kratz) ~ Now, other than the buildings including Mr. Avery's trailer, were you asked to do some interior renderings of Mr. Avery's garage?
A. Yes, sir.
Q. And could you tell me, if we look at one of those figures, direct me to one that might be helpful. Exhibit 41?
A. Yes, sir, Exhibit 41.
Q. I'm showing you what's been labeled, then, as Exhibit 41; what are we looking at?
A. Sir, Figure 41 is an overview of the garage that you asked about. Again, I hid or turned off the roof layer so we could see what's inside of that garage.
Q. I'm sorry, this is Figure 41, it might be from Exhibit No. 2, if I'm remembering correctly. Why don't you take the laser pointer and just very
briefly tell us the items that you have been asked to place inside of that garage?
A. Inside of the garage, there's a Suzuki Samurai vehicle that was in the garage when I completed the forensic mapping of that location. Next to that is a snowmobile. There's also a snowmobile on the opposite side of the Suzuki Samurai.

And then around the border, around the walls here, we see various tools, if you will. There's a tool chest in the back. There's an air compressor. Next to that is a welder. There's a freezer and a filing cabinet in here. Various larger items that we can use to locate anything else we need to find in the garage.
Q. Let me ask you, Trooper Austin, without the assistance of this computer generated image, would a jury or a trier of fact ever be able to see something like this?

ATTORNEY STRANG: That really is not a proper question.

ATTORNEY KRATZ: I can ask it a different way perhaps, Judge.

THE COURT: Go ahead.
Q. (By Attorney Kratz)~ The computer generated images, does it allow anybody, not just a trier
of fact, but anybody in the courtroom, to visualize a scene from an angle or from a perspective that the human eye could not?
A. That's why I believe that the three dimensional models are important. In this case, you know, we would never be able to have an overview of the garage interior without removing -- excuse me -removing the roof as we did in the three dimensional model.

The same with the house. And we can then move about in this model to gain other perspectives so that we can, you know, perhaps from a different viewpoint, look at those spatial relationships we discussed earlier.
Q. When talking about three dimensional, it is that relationship, that is, the relationship between a piece of evidence to a fixed object, or to a known location that's important; is that what your testimony was?
A. Yes, sir.
Q. All right. Let's talk about exteriors for just a moment. I'm going to have you -- have you look at Figure No. 10 and tell us what we're looking at?
A. Figure No. 10, Mr. Kratz, is an overview of the
entire area that I did model, in three dimensions.
Q. Does that include what would be known as the Steven area -- excuse me -- Steven Avery residence and curtilage, as well as the Barb Janda and Dassey residence and area surrounding?
A. In previous slides, we looked at a residence, in the interior, and that Steven Avery residence is over here. The garage we looked at is next to that residence.

In terms of a directional relationship, in this particular view, north would be to the bottom of the screen. And, yes, I'm sorry, to finish your question, sir, the Barb Janda residence is over here on the left side of your screen, and her garage.
Q. I'm going to have you look at just a couple of other images, Image No. 16.
A. Yes, sir. Figure No. 16 is also from my report. Essentially, we have moved our camera to get a different perspective of the Steven Avery property. This allows us to see both the residence, the garage, as well as some other items I was asked to include in the model.
Q. Were one of those items, or two of those items
that we're going to talk about, first of all, the van, the Dodge Caravan, I believe; is that shown in this image?
A. Yes, sir. The Dodge Caravan is this red colored vehicle down here in the lower left portion of your screen.
Q. For the Court's information and just as by way of offer of proof, the evidence in this case will be that was the vehicle that Teresa Halbach was asked to come and take a picture of. Were you also asked to include a burn barrel that was found, or that you took dimensions of, and measurements of, on this property?
A. Yes, sir. Both the mini-van and the burn barrel were in place when $I$ did the forensic mapping, so they were located with the Total Station. The burn barrel you are referring to is over here on the right side of your screen.
Q. And not going into any detail, because that's what the trial is for, but was it your understanding that there is some evidence that was recovered from the interior of that burn barrel?
A. That is my understanding, sir.
Q. Now, as I understand, you're able to move the
camera around, if you will. Figure No. 20 is an example of that. Can you tell us what we're looking at.
A. Sir, that is indeed Figure No. 20 from my narrative report. What we have done from that previous slide you had up is we have moved our position further to the south. And we're now looking to the northwest, to the back of the trailer -- I'm sorry -- residence we discussed before, and the back side of the garage, and items that were identified to me as being of evidentiary value, behind that garage.
Q. Although Figure 20 shows some of the same items that Figure No. 16 would be, this is a different angle and, again, something that the human eye would not be able to accomplish; is that correct?
A. And we're moving in closer from that last point, which allows us to see items in better or greater detail as they have been modeled here. So, yes, I do agree with you.
Q. Last example that I'm going to give you, and again, these are just by way of example, Figure No. 23, tell me what we're looking at.
A. Sir, this is Figure No. 23 from my narrative report. We have moved further to the southeast,
where we were before, and looking at the back side of Steven Avery's residence. We're now looking at the backside of the Barbara Janda residence, and some other items back here that I was asked to include in the model.
Q. All right. Trooper Austin, a little bit out of your area of expertise by crash reconstruction and crime scene reconstruction, were you asked to assist another expert, an anthropologist in this case, in the creation some other images?
A. Yes, sir. I was asked to work closely and under Dr. Leslie Eisenberg, to create additional model images.
Q. Were you able to perform that task?
A. Yes, I physically met with Dr. Eisenberg in Madison and had lengthy communications with her, after meeting with her person, to create model images that would help her to explain her findings in this case.
Q. Now, I don't expect -- in fact, let me just ask you, much of what you were asked to create, did you know what it was that you were creating? I'm not sure how to ask that. Why don't you tell us how that process culminated.
A. Yes, I was asked to create the model, which is my
area of expertise. However, what she wanted me to assist her with was creating skeletal models so that we could point out locations of various bones. That is certainly outside of my area of expertise, that's why I worked closely with her, and directly under her, so she could explain, $I$ would like a leader arrow pointing to this bone, and this bone is called $a$, and the name of that bone.
Q. All right. I have a figure on the screen, it's just the -- a picture of a female skeleton. We're not going to show these because that will be Dr. Eisenberg's area of expertise, but could you just briefly describe how these skeletal models were created?
A. The base skeletal model, that would be the one without any type of textures to it, I obtained from the FBI in Quantico, Virginia. They sent me a CD containing various skeletal models.

I chose the female skeleton as was most appropriate in this case. I then applied a bone texture to it, received approval from Dr. Eisenberg, and then met her in person to again show close ups or different bone locations on that model.
Q. All right. And, again, those have been created, provided to the Court and to counsel -- excuse me -- and are included in your images, both Exhibit No. 4, as well as Exhibit No. 2; is that correct?
A. Yes, sir. They are on the DVD I provided to you and they should be in the photographs also -- or the 4 by 6 images rather.
Q. All right. Let's leave the scene mapping or modeling then and let's talk a little bit about animations. Were you asked to create animations as well?
A. Yes, sir, I was.
Q. And could you tell us about that process, please.
A. To create motion, essentially we need numerous still images of those still renders. In fact, we need about 30 of them for every second of motion that we want to create. If you were to think back perhaps to a child's toy where we would have something in the corner and we flip through those pages and we see that object changing or going into motion, that's kind of what we're doing here. We're putting image, after image, after image to create that effect of moving through a scene.
Q. Now, in lieu of, or instead of taking the jury to the Avery salvage property in the middle of February, did I ask you to create a walk through, if you will, of the Steven Avery property, the Barb Janda property, and the surrounding curtilage?
A. Yes, sir, you did.
Q. And I know that we showed the Court your first draft of that, it was probably last week sometime; have you made some improvements to that?
A. Yes, sir, I have made some minor changes to that.
Q. I have given you another exhibit, I think it's Exhibit 3 ; is that right?
A. Yes, sir.
Q. Tell us what that is?
A. Exhibit 3 is the disk I gave you maybe an hour or so ago with the final version of the animations.

THE COURT: And for the record, Judge, I have given Mr. Strang his own version of that. And I will be asking that the Court accept Exhibits 3 -have I moved Exhibit 4, Janet, do you know? THE CLERK: Yes.

ATTORNEY KRATZ: Yeah, Exhibit 3, then, I would offer at this point to complete the record.

THE COURT: Any objection?
ATTORNEY STRANG: Not for purposes of this hearing.

THE COURT: That exhibit is admitted.
Q. As I play this animation, Mr. Austin -- or let me ask this first question, what improvements did you make, and how long did it take to create, and what kind of process was involved?
A. The version I gave to you last week, my draft version, was completed at 15 frames per second, meaning there were 15 images for every second of animation. I felt it looked somewhat choppy. I therefore re-rendered it at 30 frames per second, which gives it a much more fluid sense of motion, if you will.

I also felt that in that draft the gravel did not appear as it should in the animation. Because the way the software looks at the reflection of light, the gravel essentially appeared to sparkle. I, therefore, changed the gravel texture so it doesn't have that reflective capability to it.
Q. Once again, this animation, as well as all of your other still images, do you believe that they will assist, not only the trier of fact, that's
the jury, but other witnesses in explaining evidence that's found or the relationship between that evidence and fixed objects?
A. Mr. Kratz, as we put these 5200 pictures into motion, or make them give that impression of motion, that's going to help myself, you, jury members, to be able to, again, see where items are located to each other. As we go from one end of the scene to the other, or then back around to the backside, if you will, we're going to get a better understanding of what exactly the geometry is of that particular property.
Q. I'm going to play this DVD that's been created and just invite you to chime in, if you will, when that becomes appropriate.

ATTORNEY KRATZ: The record should reflect, Judge, that this is Exhibit No. 3. And I have asked Mr. Austin to -- to narrate as we go through.
Q. Go ahead, Mr. Austin.
A. Mr. Kratz, what $I$ have done is, I started at the southeastern portion of that property, if you will. And we're going to come in by those -that Dodge Caravan, which as we talked about before, was identified to me as being of evidentiary value. We are then going to pause in
front of that Caravan and identify it using a beader, and that is text and arrow.
Q. Between this rendering and the one last week, did you also remove some things?
A. I did change some of the text and I will bring that up when we get to that point, what was changed from the previous version.
Q. All right.
A. Forgive me, I did forget to tell you this earlier, sir, another change I made is, I slowed down the camera as we pan across the top of the residence, so you will see it slightly slower as we move from room to room.

Moving from the Caravan to the Steven Avery residence, what we'll do is we'll fade that roof out so we can see the interior of that residence. Now, as we move between these rooms, this is one of the changes I made. It's a little bit slower than what you saw last week.
Q. As we're looking at all these images, how many separate images are we actually seeing?
A. There's over -- For the entire animation sequence, there's over 5200 images that were rendered to create this.
Q. How long did it take to create this?
A. I utilized three separate computers to try to speed up the process. I started last Friday and I finished last night.
Q. So any delay wasn't intentional on your part?
A. No, sir. Moving from the residence to the garage, similar to the still image you showed us before, Mr. Kratz, we're going to fade the roof out so we can see the inside of the garage.
Q. If you haven't added any images, all these things that we're seeing were there while you were taking the measurements; is that correct?
A. That's correct. From here, Mr. Kratz, we're moving from the overview of the garage. We put the roof back on, if you will, and now we're looking at items behind the garage. And I have added -- these were in last week's version. I have added labels identifying Steven Avery residence and we see we are now at the Steven Avery garage.
Q. The darker area to the left, would that be what is known as the burn area, or where some other very important items, including some bone fragments were found?
A. Yes, sir, that's my understanding. We're now moving to the southeast. We're going to go
behind the Barb Janda property and we're going to identify that residence, as well as the burn barrels that were positioned behind that house.

Those burn barrels were there. I did the forensic mapping, so those have been -- their location was mapped. This is one of the changes in the text. Previous to today that said, Janda/Dassey burn barrels. I have taken the names off, so it just says burn barrels there.
Q. Some other witness may identify who actually had control of those burn barrels; was that the reason for that change?
A. Yes. From those burn barrels we're now moving back to the front of the Steven Avery property and we're going to show the geometric location of the burn barrel position there. And, again, when we show the text here, this previously stated Steven Avery burn barrel, it now just states burn barrel when she show that header.

And this is, essentially, the end of the animation generated here. We have seen those images I discussed before, those 5,000 images, and we're fading out to close off the animation. Q. Now, this afternoon we're not going to show the skeletal animations, but was roughly the same
process used to assist the jury, ultimately, and probably through the narration of either an anthropologist or a pathologist with what they believe is some important evidence found in this case?
A. Yes, the second animation you are referring to was generated in exactly the same manner. It's not as long, there's only slightly over 600 images to generate that one. And I don't know if you viewed that last week, if you did, there are no changes to it at all. That one was not altered in any way.
Q. Finally, Mr. Austin, asked a little different way and perhaps in more technical jargon, are the images that you created, these computer generated images, true and accurate depictions of the items that are portrayed within them, at least to the best of your ability to create them?
A. Yes, sir.
Q. All right. For purposes of this admissible hearing, that's all I have of Mr. Austin. Thank you, Judge.

THE COURT: Mr. Strang.
ATTORNEY STRANG: Thank you.
CROSS-EXAMINATION

BY ATTORNEY STRANG:
Q. And thank you, Mr. Austin. I just very briefly want to understand the Total Station a little bit better. When you say that device locates itself in space, is this through the assistance of a global positioning satellite?
A. No, sir. May I try to reexplain?
Q. Sure. Yes.
A. If I can. When I set the Total Station up, if you take a point directly underneath that instrument, essentially, that's our -- we call it a zero point. If you're to think back to say high school geometry, we have our X axis and we have our Y axis, and we also have our $Z$ axis, which is our height. So that point directly below the instrument, that we have created is 000. It will then will take the angle and distance to you, sir, and then it would recognize your position, then, both horizontally and vertically.
Q. Okay. And does it do that by laser?
A. Yes, sir.
Q. So, it's sending laser beam and then measuring the time back to a reflective surface or receptor on the Total Station?
A. We have a -- it's a two-man operation, if you will, sir. If the piece or the item we were measuring was over by you, or if you were standing by that, I would give you a prism, which is on staff, and you would hold that directly on that item, or directly over it, and, yes, it would reflect back from that prism.
Q. So, what it's measuring then is not the item, but the prism that someone is holding on or near the item you are trying to map?
A. Correct. The Total Station knows, or we tell it how tall it is by measuring it. We also tell it how tall the prism is so it mathematically calculates to compensate for that height. So it still -- it's measuring to the prism, but what it is determining is the coordinate to the item at the bottom of the staff.
Q. Okay.

ATTORNEY STRANG: And I may need to have the kind assistance of Mr. Kratz. May I call on that?

ATTORNEY KRATZ: Please.
ATTORNEY STRANG: If we -- For example, if we went to something with the four burn barrels behind Barb Janda's trailer.

ATTORNEY KRATZ: Give me the figure number, Mr. Strang.

ATTORNEY STRANG: I don't have the foggiest.

THE WITNESS: Mr. Kratz, can we look at Figure 23.

ATTORNEY KRATZ: You certainly can.
THE WITNESS: It's on Page 24, would that work, sir?

ATTORNEY STRANG: Beautiful, just fine.
Q. (By Attorney Strang) ~ The barrels themselves, as they are modeled here, look like they are supposed to have holes in them; is that right?
A. I applied a rust colored texture to them. I don't believe it is supposed to depict holes. It is supposed to depict just a rusty color.
Q. Just something you picked off the digital pallet that the program provides?
A. There's a library, if you will, that's with it. And I did pick a rust color to give the impression that it's a rusty barrel.
Q. Okay. I thought when we were having our virtual flyer one that I saw dark spots that I took to be holes in the barrels. Maybe -- Maybe it was my imagination of what the image was supposed to be.
A. If there were dark spots on there, and I think I do believe there are, it's designed just to -just to show an old barrel, not designed to show any type of hole.
Q. So, one who is looking at this and says, boy, gee, there look like a lot of holes in those burn barrels, is seeing something that's simply supplied by your imagination, or the computer's choice of replication of a background, or a color that you have selected?
A. For the barrel, could someone get that impression, from what you are telling me, yes.
Q. Okay. And I'm not trying to tell you, I'm just asking you. I mean if it looks like a hole, that doesn't mean there was a hole in the barrel?
A. Right. You said you got that impression so, obviously, somebody could, yes.
Q. Or I could have serious mental problems, I suppose. But setting that aside, if it looks like a hole, that doesn't mean there is a hole there?
A. In that case, again, that was a texture from a library designed to show -- in fact, I believe it was for -- simply for a burn barrel that I utilized.
Q. Excuse me?
A. The texture I assigned it was from a library for a burn barrel.
Q. Oh, okay. And just -- I'm just trying to get a better feel for the -- I'm particularly interested in the three dimensional process. You consistently use the term model to describe the images that you have created for the State. Why do you use the term model?
A. That's the term that's mostly used in the industry, if you will, the software program I'm using is generally used in the jewelry or marine or both design industries. And these are generally referred to as models. I could just the same refer to them as a three dimensional scaled diagram, perhaps it's just a term that's been instilled in me from when I received the training.
Q. Sure, but one thing you mean to denote by choosing the word model is that this is not a photograph in the sense that people have understood that term for the last 150, 160 years or so?
A. That's correct. No, I would never try to state this is a photograph of the scene. It's not.
Q. It's not a photographic depiction in the sense of something that is as accurate as a photograph might be?
A. I don't know if I agree with you on accurate, the geometry here, everything is accurate.
Q. And I'm with you on that. I'm with you on geometry and spatial relationships, okay. You and I don't have any quarrel at all, at least for now, about that, and I don't know that we ever will.

But in terms of the details that a human eye might take in, a hole in a metal burn barrel, chipped paint on the side of the garage, graffiti on the side -- I'm not suggesting there was graffiti -- but graffiti on the side of a garage, a broken window pane, a lone leaf left on a tree, those sorts of visual details here, the model doesn't even purport to capture?
A. That's correct. No, you would see those in your crime scene photographs.
Q. So what the model is useful for, among other things I guess, but primarily, is showing us relationships in space, of one item to another, for example, true?
A. Yes.
Q. Okay. And does the model -- or does the Total Station, which you eventually download to the forensic 3D software, does the Total Station do a good job, for example, of capturing the circumference of the opening at the top of a burn barrel?
A. To map location of the burn barrel, each particular one, what $I$ would do is, I would take three points on there. And I can use those three points in the CAD software to create a perfect circle, if you will. So, you know, I don't actually go around and go over every half inch with the prism. Three points, because that's what I need to create a circle.
Q. Okay. So if we look at the four burn barrels, what you have done with your partner who's holding the prism for you on the stick, is you have gone to three separate points on the top of each one of those four burn barrels?
A. Correct. There would be three points on each barrel, for those four there.
Q. Okay. And then the computer says, I know what to do now, I will create a perfect circle?
A. Well, I have to tell it to do that. You know, I will, essentially, in the software I have got
various options, editing, drawing tools, etcetera. I will tell it, I'm going to draw a circle and I'm going to give you three points. I then identify those three points and my circle is generated.
Q. Got it. So, again, within the limitations here, if what we were interested in knowing is, you know, how far from the side door on Barb Janda's trailer is the cluster of four burn barrels, this would be a very good tool for doing that, correct?
A. If I wanted to -- Are you asking me if $I$ wanted to physically measure that distance using the CAD environment, or to get a perspective view?
Q. A perspective view.
A. Then, yes, I agree, this would be the tool.
Q. Okay. And, indeed, I suppose you could use the software to spit out the exact -- not spit out, but to tell you, if you were to run a cord line from the middle of the four burn barrels to the door knob on the side door of the trailer, we could get down to a fraction of an inch the distance of that cord line, correct?
A. Yes, we could.
Q. But as to what the burn barrels actually look
like to a human eye, or would look like in a photograph, we shouldn't be relying on the model to give us?
A. I agree.
Q. Now, if we go back, with Mr. Kratz's assistance, to Figure 9, is that possible?

ATTORNEY KRATZ: Sure.
Q. Okay. Now -- And I'm also going to be interested in Figure 10 eventually. But on Figure 9, I see what looks to me like rather dramatic shadows of two lovely leafy trees, casting across the bottom half of that picture.
A. Yes.
Q. Is that what that looks like?
A. Yes.
Q. And the measurements here were taken between November 5 and November 12, 2005?
A. Yes.
Q. Okay. If I have my directions about right, should I be alarmed by a catastrophic change in the planet earth's orbit and tilt that I now have a strong sun shining out of the northwest, in early November, 2005, in the northern hemisphere?
A. If I can put this particular item in perspective, and perhaps I should have done that with

Mr. Kratz. The page that this is on, on Page 14 of my report, is talking about the forensic 3D software package. And the image right before this one is one of the unrendered garage. And this one is shown in my report directly underneath it as showing a rendered version.

And my point here, the point is in the report was to show how we can generate these models with the various textures on them. This is in no way -- This particular view is not -- or with the shadows, is not shown any later in the report when I'm talking about the scene models. And these are actually not leafy trees, these are the pine type trees that are up near the residence that you are seeing. So I would not try to purport that this is how it looked on November 5th, 6th, 7th through the 12th, 2005. This was to show the software.
Q. So how do the lovely long shadows of the pine trees get in there.
A. I turned the sun on in this particular case to show, again, the software's capabilities. You will see in the other renderings, the sun $I$ actually have off. You will see some shadowing, but the sun giving directionality has not been
turned on. I did not intend to depict any time of day, specific time of day, in any of the models you are seeing, you know, that are designed to show you the actual scene or any animation.
Q. Or to suggest the orientation of sun to the scene?
A. No, I did not do that or did I have any intention of doing that.
Q. Okay. And when we see trees in your models, particularly the ones that are leafless, as they might be in early November around here, they all look the same to me. Are these simply trees that the computer generates for the purpose of suggesting that there is a tree in that spot in space.
A. This software package allows me to actually specify different types of trees and to specify different seasons. You would see your apple blossoms in the spring and apples in the summer. I, for the purpose of being demonstrative of their being a tree, $I$ did not vary the trees at all. So you are very correct in that all of the leafless trees are the same. The only difference is in their size.
Q. Okay. And in general, then, there's a certain amount of artistry, if you will, on your part or on the part of the operator turning the sun on or off, selecting color palet, that kind of thing, to help make this an attractive model, if you will.
A. The intent is not to be attractive, if you will. It's to show that there is a tree in this position, that this item is a barrel. But do we have some liberty, if you will, of picking what tree is going to go in there, or what texture is going to be there. I suppose. I do the best I can to try to make that as close as possible.
Q. No. And please don't take this as an attack. And by attractive, I understand you are not planning to send this home so mom can put it on the refrigerator. But it's designed to give us a sense of reality, or the illusion of reality of a real scene, correct?
A. The design is to give you an idea. And I mentioned these buzz words before about geometric perspective and spacial relationships.
Q. Right.
A. But to give you an idea of how that scene is laid out. It's not, as you mentioned before, it is
not designed to give you a photograph, or a photographic image of what that scene looks like.
Q. So whether to color the garage, or what color to make it, whether to turn on the sun, or leave the sun turned off, you know, which direction the shadows should fall, whether there should be shadows, how to color the gravel, these are all just decisions you have to make, in good faith. I'm not suggesting anything to the contrary. But these are just artistic decisions, for want of a better word, in presenting something that looks other than just shades of gray?
A. Yes, those are decisions that I made.
Q. Okay. And then there's, you know, you don't have to buy into the label artistic, I don't mean anything by it. I don't mean to pick a fight by that. But in addition to those kinds of decisions that you made, in creating your exhibits here, there are also some decisions that were made either by Mr. Kratz, or by Mr. Wiegert, or Mr. Fassbender, primarily, correct?
A. As to the colors that were used?
Q. No, no, other decisions as to the depictions; specifically, what items would be included?
A. Oh, yes.
Q. Okay. And those decisions simply were made by an advocate, or people on one side of this lawsuit, for demonstrative purposes?
A. Can you say that one more time. I did not understand the lawsuit part.
Q. Sure. Some of the decisions about what to include, simply were made by either Mr. Kratz, as one of the lawyers for the State, or one of the two lead investigators on the case, or their purposes of showing or demonstrating what they would like to show or demonstrate.
A. Yes, that's correct.
Q. Okay. Now, I'm quite certain, knowing these gentleman somewhat, that they didn't ask you to include anything that was made up, made up out of faux pas. And you also were on the scene, correct?
A. Yes.
Q. So, did you satisfy yourself that the things you were asked to include in fact were things present at least at some time between November 5 and November 12th?
A. If I understand your question correctly, are you asking if I'm satisfied everything I have depicted was at that scene during that time?
Q. Yes.
A. Yes.
Q. Okay. Nothing was added in. In other words, if we -- if we go to Figure 41, again, with Mr. Kratz's help.
A. Overview of the garage, sir?
Q. Yes. Yes, with the roof peeled off. So, if we go to that, there, in fact, was, looks like a John Deere lawn mower or tractor, present in the scene at some point while you were there?
A. Yes, sir.
Q. There were two snowmobiles, each a flank of the Suzuki Samurai, not just one?
A. Yes.
Q. Okay. But now, to go in the other direction, or the converse of this, there also were items present that have been omitted from these models, correct?
A. Yes. Omitted or not measured. There were a lot of debris, for lack of a better word, in that garage.
Q. Okay. So while we haven't added anything in that wasn't there, we have taken out some things that were there?
A. Taken out or they weren't measured when $I$ was
there.
Q. And if they weren't measured, they cannot be included?
A. If they weren't measured, then you are not going to see them in there, denoted as being in a specific location.
Q. So someone looking at this Figure 41, for example, unless he or she was able to look at a photograph taken at about the same time, would not understand that the garage, in fact, contained a whole lot more items and clutter than it appears to in the model?
A. I believe I understand your question. Like if I were to look at the -- there's a table back here denoted in silver or grayish color. There were items on that table, if you will. There were -I can even tell you what they are: Parts, or boxes, or other items. No, I denoted the location of that table, but not everything that was on it.
Q. Right. In fact, your recollection is that the table top was all but covered with junk and miscellaneous things.
A. Yes.
Q. Okay. Likewise, the garage floor was not
covered, but quite cluttered with all kinds of parts and miscellaneous stuff?
A. There were more items in that garage than what were depicted in this particular perspective.
Q. Perhaps the most striking example of this, if you went to Figure 31.
A. The residence over here?
Q. Yes.

ATTORNEY STRANG: Is your Honor able to follow along?

THE COURT: Yes, I am following along. I have hard copies of the exhibits and I'm looking at them.
Q. Okay.

ATTORNEY KRATZ: Do you need something from me?

ATTORNEY STRANG: Figure 31 would be great, just for the spectators.

ATTORNEY KRATZ: With or without arrows?
ATTORNEY STRANG: Right now, either is okay. Very well.
Q. If the uninitiated took the model in Figure 31 as an entirely accurate representation of the way Mr. Avery's home looked, one would conclude that at least as to his living room and dining room,
he had a fairly minimalist philosophy of interior design.
A. In fact, $I$ documented that in my narrative too, sir, that items in those rooms were not measured, you know, what the furniture that was there. Yes, without -- if they weren't shown a crime scene photograph, or they weren't told that this is designed just to show relationships of certain objects, yeah, they would not probably have an understanding that there were other items there.
Q. Things like couches, and chairs, and fairly large pieces of furniture?
A. I remember two chairs. I don't remember having a couch.
Q. Okay. But in other words, there's some significant pieces of furniture that just aren't here?
A. That's correct.
Q. Okay. And so the things that are included reflect some editorial judgment on the part of the State in this instance?
A. Or items that I, like I say, I didn't actually get to the chairs that you were referring to there by the time our warrant ran out that day. So, yeah, there's also some judgment on my part
when I was in there as to what items I could get to in the time allotted.
Q. Fair enough. Fair enough. And throughout making these slides, in a number of ways, you were guided by the requests of, let's just say agents of the State, in directing you on which of the available items that actually were there should be included and which should be omitted from the image or the model?
A. Yes, that's correct.
Q. Now, in explaining that such direction is common in your work, you told the Court that this is common to rely on one side or the other in a lawsuit, for that sort of direction?
A. The bulk of the work that $I$ do, as -- as Mr. Kratz pointed out, is -- is in crash reconstruction.
Q. Yes.
A. And a lot of the diagrams that $I$ do for crash reconstruction, we don't show everything in those aspects either. We'll actually usually collect more information than we need, or on the flip side, we can't show every single crack that's in the pavement. So that's what I meant by it's
relatively common to only show certain aspects or for certain things to be omitted. You know, I'm never going to intentionally omit something of an evidentiary value for either side, but I think it would be impossible to show everything.
Q. And that's not where I'm going. What I'm saying is, you are getting your direction from one side?
A. Yes.
Q. Not from two sides?
A. That's correct.
Q. And because you are employed by the Wisconsin State Patrol, when would the defense ever be, in a criminal case, the defense ever be suggesting what should be included and what not included in a model?
A. Typically, that has not happened. I did offer to Mr. Kratz, you know, that we could add additional items if there was something that you particularly wanted displayed or shown in there. I haven't heard anything back on that yet. But, no, typically we don't call the defense attorney up and say what do you want in the diagram. Or, you know, I guess I haven't had a chance where they have approached me and said can you add this. I have been asked in court to draw in
where something was on a diagram but, no, not the scenario that you are portraying. That's not happened to me.
Q. It's the first I'm hearing of it too. And, you know, they are entitled to create their own demonstrative exhibits. They just are, just the same way I am.

The point is, you are someone at the technical reconstruction unit of the Wisconsin State Patrol Academy more typically would assist the prosecution in preparing such exhibits?
A. That's correct and that's how it was in this case, as you point out, yes.
Q. Here we can use this just as well as anything, the -- the items that are shown, all of them were mapped with the forensic station or the Total Station?
A. No, a lot of these items were manually -- the measurements were manually recorded. It would be possible, but very difficult, to set the instrument up in a small bedroom, as you will, that we had here in the residence. It was quicker just to manually, if you will, measure those positions.
Q. Fair enough. Fair enough. And those
measurements may have been taken at different times, by different people?
A. No, I took -- the measurements that you are seeing here were taken by me on the last date. So, obviously, they are going to be at different times, but $I$ was in there at one, you know, all at one time frame, if you will.
Q. Okay. And, again, don't -- I'm just using this demonstratively so to speak, okay, so don't get carried away with just the image of, but in general, the images we have seen, the mapping, whether done by the Total Station, or done manually, was done at different times?
A. Oh, I'm sorry, I misunderstood your question. Yes, they were all done, you know, in the course of one day. Then we would call it a day, go home, come back the following day, reset up, or do a different area, or finish that location.
Q. And during the time you were on scene, doing the mapping, there were 50 or 100 other law enforcement officers also on the scene, executing at least a couple of search warrants; you were aware of that?
A. Yes. They were never in the immediate area we were working in. It's a very large area,
obviously.
Q. Right.
A. A lot of the searchers were down in the -- where the vehicles were in the salvage yard. But, yeah, $I$ do know, for example, that there were probably 60 of my co-workers that were out there doing searches.
Q. Okay. And you have no way of knowing what items law enforcement officers may have moved before you got around to mapping the dimensions and location of those items?
A. If that happened, I wouldn't know.
Q. I would like to go briefly to the skeleton model. Just an unlabeled image. There we go. Great. That works fine. This thing actually came off a CD that the FBI sent to you?
A. Yeah, I contacted their -- was it their Structural Imaging Unit -- I would have to look at the particulars, and requested a -- Structural Design Unit of the FBI and requested a skeletal model in a standard CAD, be in a drafting format. They sent me what's called a DXF file, which means drawing exchange file, that my software could also read. So, yes, I did obtain this from the FBI.
Q. Okay. And was the -- was the depiction on the FBI's CD or DVD, whatever it was, a photograph, or was that image itself a computer generated image of some kind?
A. What they gave me was, you know, for lack of a better term, we discussed it before, was a three dimensional model. It was actually the CAD file, if you will, would have been similar to my final overall scene of the Avery property. This was just a file, if you will, of a female skeleton, which then $I$ can move around in $3 D$ space.
Q. Sure.
A. Or put the texture, or label accordingly. So it wasn't a picture they gave me, was the actual model itself.
Q. Again computer generated?
A. Yeah, a computer electronic file. Yes.
Q. Yes. And as to whether it was a female skeleton, you simply you relied on the label assigned to the file?
A. I trusted the FBI. And I trusted Dr. Eisenberg to confirm, yes, this is female.
Q. Okay. And if you know, do we have a height on this skeletal model?
A. On the model itself?
Q. Yes.
A. I think -- I think I have it right around 5 feet. I would have to go back and look, sir.
Q. But in any event, that's a number you could give us, or dimension you could give us as height?
A. Of the skeleton?
Q. Yes.
A. Yes, I could go back and see what that was. Although, everything -- if $I$ were to adjust that model's height, everything would be proportionate, meaning if $I$ made it 5 feet tall or if $I$ made it 20 feet tall, the relative size and proportion would remain the same.
Q. Okay. So this can't be taken to depict any particular person, in other words?
A. No, that's not my intention here at all. It was to help Dr. Eisenberg to point out specific bone locations.
Q. Right. The knee bone connects to the shin bone, and one can see where the knee bone would be in relationship to the shin bone?
A. Yes.
Q. Okay. That's fine. So let me go to some specific questions. And here it will be useful, not so much to use the screen, but just the
binder we have here, we all have the same one.
A. Okay.
Q. Now, we have been describing three dimensional models. But of course, none of them are, right? We're looking at the flat pieces of two dimensional paper, or flat images on a screen?
A. Yes, it's a flat screen.
Q. The illusion of the third dimension is perspective provided by mathematical algorithm?
A. Yes.
Q. The design of the software itself, or the design of the algorithms that create the illusion of three dimensional space are not something that are your work product?
A. That's correct.
Q. Not something in which you are expert?
A. No, I'm not a programmer.
Q. So this is -- this is a commercially available, or proprietary software package that somebody in the Wisconsin State Patrol Academy purchased and you use.
A. The first part of your question is correct. The Wisconsin State Patrol Academy did not purchase this. This is something that, as a trainer of the software, that I have from them. So this is
not something the State Patrol has purchased yet.
Q. Sure. Okay. And that will teach me to ask compound questions. If we go to Figure 17?
A. The exterior of the trailer, sir, or the residence, rather.
Q. Yes, looks like that to me. You have no idea what, if anything, duck tape may have to do -duck tape under the porch may have to do with anything in this case, do you?
A. No.

ATTORNEY STRANG: Do we have a labeled version of that?

ATTORNEY KRATZ: Sure.
Q. Okay. But somebody asked you to include some duct tape --
A. Yes, that's correct.
Q. -- in this figure. And didn't give you exactly where the duct tape was supposed to be?
A. No, that's based off of a photograph.
Q. So, quite honestly, you simply tell us you here that are doing an approximation?
A. Yes.
Q. Again, whether duct tape has anything to do with anything, you have no idea?
A. That's correct.
Q. Okay. Likewise, in Figure 18, you refer to a number of items, a vehicle bench seat, a mallet, tire cords, a rake, and here, again, you tell us placement is to be deemed as being approximate, correct?
A. Yes, sir.
Q. So this is something that you just decided where to put these items in the model?
A. I tried to do the best I could to explain in the narrative here as to how the items were placed. The one you pointed out here, yeah, they had been moved before I forensically mapped that location. I relied on photographs taken by the State Patrol Trooper Jim Reese, to put those items in place. So I did do what I could to note which items were mapped and which were based on photographic evidence.
Q. But we could look at the photographs, if he wanted to know where the items were.
A. Which I did in this case. But now our view here, we've moved up to -- I don't know what our elevation is here, looks like somewhere around 50 feet, looking down, so we can see the entire area.
Q. So if we wanted to pretend we were 55 feet tall,
now we can do that.
A. I don't think the intention would be for play acting, just to get a good overview.
Q. Right. But that's the point of view so to speak.
A. Yes.
Q. Okay.

THE COURT: Excuse me, Mr. Strang. Let me ask just one question. The approximate location, based off of the photos, is that a number of photos, or one photo that showed all these items?

THE WITNESS: There were several photos I was able to utilize. I can't tell you, your Honor, how many I had at that point. Trooper Reese did take several shots behind there with the camera. And for some of these, if it was possible, I also utilized aerial photographs so that we can see the vehicle bench seat in one of those. But if I could use -- the more I could use, obviously, the better.

THE COURT: Go ahead, Mr. Strang.
Q. There were a number of area photographs taken, some of which you used to assist you?
A. Yes.
Q. Were any of those done with a zoom lens?
A. I would have to look at my notes to see what Trooper McConnell did or what type of camera he
had, or focal lens. I guess I don't know because I wasn't involved in those.
Q. And it's not worth the time. Did you look at them digitally?
A. Yes.
Q. Okay. So we know they were digital photographs at least?
A. Yes.
Q. And, therefore, we could use Photoshop, or something on the computer, to enlarge or minimize the view of part of those photographs.
A. That is correct. There were also some non-digital pictures that $I$ believe were arranged to be taken by DCI, which showed items also. Those were not digital, but you could look at them and see.
Q. Okay. If you go to Figure 32 -ATTORNEY KRATZ: Labeled? ATTORNEY STRANG: Either way.
Q. -- this is the bathroom?
A. Yes.
Q. Okay. There's a bathroom door, but it looks like the doorway has disappeared?
A. The material on the -- I'm going to use a laser pointer here, sir.
Q. Sure.
A. The material on this wall is the same as the material on this wall. And you see this, this is a shadow from this wall coming down. It's going to be in the rendering or perhaps how we're displayed here was printed.

There is an opening here, but because the wall behind it is identical in texture, it gives us the illusion, if you will, in that picture, that it's a solid wall. But we do see a shadow from this back wall in here, which shows us that there really is an opening there. If I would have made this wall darker or this wall darker you would see a difference.
Q. I would see a doorway?
A. Yes. Do you see what I mean about the shadow that's back here? The shadow is actually on that hallway wall, so that's why we're seeing it inside, by looking through the door.
Q. Okay. So, it's not a situation where there was an error in measurement or something that caused the computer to think there was no doorway into the bathroom?
A. No, it's the fact that $I$ have the same texture on that wall as I do on the other wall and that in
this particular render gives us that -- I don't want to say optical illusion, for lack of a better term, it appears to us that that door is missing.
Q. Here, again, this isn't another example where you, quite forthrightly, in the report, told us that you are approximating the location of the guns?
A. That's correct. And you're right, that is mentioned in the report.
Q. If we go to Figure 36-A now, you may not know enough about this case to understand this, but this sort of model is something that the lawyers have been probably spending a fair amount of time looking at. And I have seen photographs depicting the same basic area.

So just for the Court's benefit, there are a very noticeable pair of men's slippers just to the left of the key in the photographs, of the same area that you have modeled here. Have you seen those photographs too?
A. Yes, I was given a singular photograph in this case to show me the location of that key. And I was asked to put that key in. I am aware of the slippers they are talking about.
Q. And the outlet on the wall?
A. That's correct.
Q. Okay. So is that the kind of thing that you are simply told, don't bother about the outlet on the wall, don't bother about the slippers, just show us the approximate location of the key?
A. I was asked about the outlet on the wall by the prosecution, and that one I would have had difficulty putting in without having measurements. I did not measure the outlets or light switches when I was there. I felt comfortable putting the key on the carpeting on the floor, but I did not feel comfortable in putting the outlet in.
Q. An earlier draft of this -- and I understand it was just a draft -- had no key fob on the key correct?
A. That's correct.
Q. No little blue or purple strap. Were you asked to add that back in?
A. That didn't exist at that point, in the previous draft. I believe you are referring to the one I had delivered to you back in December, what was in there was a generic key, if you will. It was not the actual key or a model of the key that was
found.
After that version came out, I was asked to put in, if you will, the actual key. So I was given access to it. I took measurements of that key and, hence, you see it in this particular version.
Q. Okay. And as we go through, we don't need to stop particularly on each one of these, but Figures 37 and 38, you have got cross-hatched areas, shows approximate locations of things; is that again based on photographs, or just somebody's description to you of where bleach or duct tape was found?
A. Yes, and yes. There were photographs of both of these items. In fact, looking at my photographs that I took when I was in the residence, the bleach you are referring to in Figure 37 was in place. But, yes, those are based on requests they be in and/or based on statements and photographs.
Q. Go to Figure 44 , if you would.
A. Yes.
Q. Now, here some color has been added for highlighting, specifically, blue color, correct?
A. You are referring to the truss. I apologize, my
version is black and white.
Q. Do you have the -- Do you have your little -your writing at the top, your captioning?
A. Yes, you are referring to the mark, I can see it in the one Mr. Kratz put up. Yeah, I thought that was a blood print?
Q. Now, the blue coloring is something added by you?
A. Yes.
Q. Just to highlight an area?
A. Yes. I believe as I wrote here, it was shaded blue to make the area differ from the remainder of the other sections of the trusses. I did that to show a location.
Q. The location is where at least someone told you there were some marks on a ceiling truss?
A. I actually, when we surveyed -- This part, we did use the Total Station for and myself and other officers involved saw those marks ourselves. So that actual location is correct on these. As to do they have any value, I don't know. But we mapped out that location and we put -- I put them in there.
Q. Whether the marks themselves that you have highlighted have anything to do with anything, you have no idea?
A. That's correct, sir.
Q. The next slide, Figure 45 -- Are we using, in Figure 45, the scene as it looked in March, 2006 or the scene as it looked in November, 2005, as a starting point for the model?
A. The original model -- and if I'm not following you, please, please stop me.
Q. Oh, sure.
A. The original model that's here is based on forensic mapping that I did back in November of 2005. Now, what my intention to depict here is items that were denoted by investigators in March of 2006 .

Apparently they had gone back in and found some items of evidentiary value. And that's what this and the following photograph are designed to -- excuse me -- I mean photograph image, are designed to depict, is items that they noted during that examination.
Q. But the items themselves were among those that were mapped in November, 2005, or were they simply added in, based on new information in March, 2006?
A. The paint thinner, I think, as I talked about before, I didn't map the items that were on top of that particular bench. I did observe, after reading the reports and looking back at my photographs that $I$ took when $I$ was in the garage, the paint thinner was in place. I can't tell you exactly, say it's 3 inches over, 4 inches back. I can't do that.
Q. Sure.
A. That's why it says approximate.
Q. Was the blackjack creeper?
A. The blackjack creeper was in place when I was there. And that one I could put in based on the items around it. It's right up against that air compressor and by the welder, so I had no difficulty in putting that in.
Q. Although, you had not mapped it?
A. No, the location of the blackjack creeper was not noted; however, the compressor behind it, there is a lawn mower in front of it, a waste paper basket, and a welder right there. So that was -I was very confident in putting that in place.
Q. All right. Very briefly, we don't even -- I don't think we need the images because they don't have figure numbers, but there are some close up views of the skeletal model showing defects, what you have described as defects, or probably Dr.

Eisenberg described as defects, in the mental foramen and in the parietal bone, true?
A. Yes, sir.
Q. And on those you simply picked, or Dr. Eisenberg has picked at random, which side of the head to use as in modeling those defects?
A. I believe that -- I guess I don't feel comfortable discussing that. I was directed that it's the left side of the head at this particular location of the parietal bone. Again, as Mr. Kratz pointed out, that's well outside of my area of expertise. I generated these models under her supervision and for Dr. Eisenberg.
Q. Okay. I'm interested in the text then, I guess, just to nail that down on page 56.
A. I'm there, sir.
Q. You write, in part, however, it is unknown from which side of the mandible the fragment originated. For demonstration purposes only the model shown below depicts the left side of the head.

ATTORNEY KRATZ: Judge, I'm sorry, the mandible is the jaw.

ATTORNEY STRANG: Right. Yes, it is. ATTORNEY KRATZ: Dr. Eisenberg will testify
exactly where the defect is on the cranial defect. But other than that, your Honor, the text is what it is.

THE COURT: I must have a different Page 56, because my Page 56 doesn't show a jaw.
A. I'm sorry, Mr. Strang, could you repeat the question.
Q. Well, the question was, am I right that simply for purposes of illustration here, what you are saying at least is, you are using the left side of the mandible.
A. I believe, and thank you for refreshing my memory on this one, what $I$ did in that case, that I showed one of the mental foramen which, again, well outside my area of expertise, my understanding is it's a opening for a blood vessel in the jaw. There's blood on each side of the jaw. I depicted one of them. I believe the text says after that, that the mental foramen on the right side of the jaw is similarly located.
Q. Very well. Technically, if you were asked, would it be possible to start with, you know, Figure 31, for example, and then add in one arrow or label at a time, like a PowerPoint presentation, to use something much simpler, with which I'm
familiar with?
A. You are asking that could be done?
Q. Yes, could that be done technically?
A. Oh, yes.
Q. Without an unreasonable amount of work?
A. No, it would not be unreasonable at all.
Q. Okay. What you have given us here are all or nothing. All the labels, or none of the labels, on the figures that -- for which we can choose labeled or unlabeled?
A. Yes. What I did was I gave -- obviously, I couldn't do that in the report. Essentially, as you said, it's all or nothing here.
Q. Right.
A. What I gave Mr. Kratz was 4 X 6 prints and electronic versions of either, yes, all or nothing. But, no, it would not be any difficult amount of work to separate those out, or to put them into a PowerPoint presentation.
Q. There's nothing magic about PowerPoint, but my point -- my point simply was, if some of the labels were acceptable to the Court or the parties, and not others, is that something you could do without a great deal of trouble?
A. If that were the decision, and either you or

Mr. Kratz were to direct me as to what has to be done, yes, we could make that happen.
Q. Okay. And similarly, no big deal to take out words in some of the labels, if that was the decision? So, in order words, it could be garage, rather than Steven Avery's garage, just for example?
A. That's correct. And just to go a step further if I may, sir.
Q. Sure.
A. In the animation, that would be relatively easy also.
Q. Okay.
A. The difficulty would be if we had to re-render some of those approaches, that would take a lengthy amount of time. But the textural parts in there can be altered rather simply.
Q. All right. And I think my last question is, the new DVD that $I$ was just given this afternoon, do you think that, without any purchase of proprietary software, I could pop that in a laptop and run the virtual tour, or stop it, or sort of use the exhibit as well?
A. Yes, there's nothing proprietary about it. It's written to an M-PEG 2 Format, meaning any DVD
player can read that.
Q. Okay. And that can be stopped or backed up, that kind of thing, by the person running the laptop?
A. Yes, just as if you were going to put a regular movie in there, you could pause it, or reverse, or fast forward.

ATTORNEY STRANG: Thanks. That's all I have.

ATTORNEY KRATZ: Nothing for this hearing, Judge.

THE COURT: All right. Your witness is excused. We'll take our break at this time, give the reporter a rest. Come back in 15 minutes.

ATTORNEY KRATZ: Judge, on this issue we don't anticipate any more testimony; do you want a brief argument?

THE COURT: I will hear the argument after we get back.

ATTORNEY KRATZ: What time do you want us back?

THE COURT: Fifteen minutes, quarter to four.
(Recess taken.)
THE COURT: At this time we're back on the record, $I$ will hear argument on the defendant's
motion regarding the animations. I think, Mr. Strang, we'll let you go first, I'm sure you know exactly what the objections are.

ATTORNEY STRANG: Sure. I think we can narrow the scope considerably. In the end, I don't think there will be any real problem at all with the skeletal model. And I can work through with Mr. Kratz or his colleagues any minor issues that remain.

But I think -- I think where we're heading on that is that they have already removed color highlights on bones, which was good. And we're probably heading toward unlabeled images, first, and then adding labels as a witness describes, you know, whatever it is that the arrow would come in for. And I don't think that editorial content of the labels on the skeletal model would be any issue at all. They are just really using formal names for bones. So I think that will wash out.

I will talk a little bit about proportion and, you know, get a better understanding of that now that $I$ have a foundation from Trooper Austin on that. But I don't expect that the Court will need to address
that and we probably would withdraw the motion so far as the skeletal models go -- or model.

The Avery property, you know, this northwest corner of the 40 acre parcel will present some difficulty, perhaps, and just to describe what it is for the Court. I don't have a good vocabulary for this because, at least to me, not being involved in, you know, air crash cases or personal injury cases, where a great deal of money is at stake, computer generated animations are new to me, even though they are not new to the profession, particularly.

But the concern, if $I$ can articulate it, is that the models come so close to a realistic or photographic quality that it's easy to forget that they just are not. The photographic eye of a video camera picks up everything within it's field of focus and there's no opportunity for somebody to say, well, I want this flower pot in, but the watering can over there, I want that taken out.

Now, obviously, with digital photographs we actually can do that kind of thing now. But in the traditional sense, a video recording or a photograph gives a true depiction. These do not.

But what's included is so deceptively good -- and I don't mean in a pejorative sense perceptively, but it's so realistic appearing that it's easy, I think, for a juror to forget that he or she is looking at a collection of pixels that reflects editorial judgment on everything other than the geometry.

And I will simply take the geometry and the spatial relationships off the table here. I'm not concerned about the accuracy of the algorithm. I'm not concerned about the accuracy of measurements, whether they are manual or done with the Total Station device. That can be developed easily enough and understood by way of foundational questions on direct, or a few simple questions on cross-examination. And jurors then can understand that, well, you know, there may be some slight human error in spatial relationships. Not worried about that, or the geometry, if the Court will.

Where I get worried is things like holes in burn barrels. That kind of thing, it is very easy to assume that there really must be a hole in the burn barrel if it looks like there's a hole in the burn barrel.

Or easy to assume that, you know, the dog was standing out at the end of his leash, if he's standing out at the end of his leash in the depiction here. It's all that much easier to lose track of the fact that we're not depicting anything as it would have been, necessarily, on October 31, 2005.

We just -- There's no way of knowing. These are later creations based on later measurements. We'll also have to work some on labeling, but my expectation would be that collaboratively the State and the defense could come to some agreement on labeling as to the trailer and the Janda trailer and the surrounding yard, for want of a better word.

We may even get -- We may, we're not yet today, but we may get to some agreement on something like the image that has a rake and tire cords and a mallet and a number of items shown in approximate locations. It may be that if the State introduces photographs taken during the same week, that photographically show the scene, it may be that I'm a lot less concerned about a demonstrative representation once the jury understands, here are the photographs and here's
the diagram, which, you know, which is really intended just for argument or illustration and not for pictographic accuracy. We're not there yet, we may be able to get there on that topic.

The greatest concern and the one on which we probably do need the Court's help is the garage. The garage, as depicted in the models here, really is materially different than the garage was in real life. And I say to myself, here, this is where the differences are so material that, you know, an actual jury view of the garage would be better than a virtual tour of the garage.

And the problem may be exasperated by the fact that for whatever reason, at least the photographs that Mr. Buting and I have seen of the garage, aren't particularly good and they are not particularly numerous. So I don't know, here, that -- there may be photographs I have not seen, not that they haven't been given to me, but just that there's such a mass of photographs, I'm not sure I have looked at every photograph we have.

But it may be that there are photographs I have not seen or things that could be blown up
that would allow the jury to see the garage as it actually was. Because the differences are material and they may be material to arguments that the State wants to make. They could potentially become misleading if one is relying on the -- on the computer model only as to the garage.

Could something fit in the garage; could something have been laid down in the garage; the truss marks; the marks on the truss. I have no reason to think that the State will be able to show the relevance here at all of marks on a truss, so to have an image that takes the roof off, gives the juror a view that, as the witness said, probably is not humanly possible to have.

And then on top of it, highlights something that may have nothing at all to do with anything, in fact, as far as $I$ know does have nothing at all to do with anything relevant or probative here. It becomes unfair. So that -that -- the garage really is where most of the points of contention lie. And whether we can get there with photographs that would allow the jury to take them proper in a fair context, a demonstrative model of the garage, I don't know.

And, you know, as I say, the trailer, would I be much happier with just a video camera walk through, which may or may not have been done at the scene, $I$ don't know. I think it would be more accurate, but there probably are enough photographs in the end, or there may be enough photographs of the trailer that we can live with modeling as long as the Court gives a good instruction on what a demonstrative exhibit may or may not be used for properly.

THE COURT: Mr. Kratz.
ATTORNEY KRATZ: Thank you, Judge. I appreciate Mr. Strang's concessions regarding admissibility. And that's what this hearing is. It's not to decide the weight that a jury may give to these items, but simply whether or not they are admissible.

We're left with, then, the standards of admissibility for demonstrative evidence, which is one of the simplest formulas for a Court to apply in admissibility hearings. And it's simply whether it will assist the jury and whether the probative value may be outweighed by countervailing factors, the 904.03 analysis.

Demonstrative evidence in and of itself
is certainly admissible. As Mr. Austin testified, if a citizen can come down from a witness stand and draw an intersection on a chalk board without one measurement -- without it being at all to scale and that's admissible, there shouldn't be any question regarding admissibility of these kinds of images; that is, with in excess of 4100 measurements and being perfectly, not only to scale, but of geometric proportions.

Here's a case, Judge, State vs.
Peterson, the 1998 decision in Wisconsin, just cite it just for the record, at 222 Wis. 2d, 449 which describes the thing that I'm talking about; that is, the determination of admissibility requires this Court consider the degree of accuracy in the recreation; the complexity and duration of the demonstration; whether there is other available means of proving the same facts; and those risk factors that I talked about, that is the risk that may impact on the fairness of the trial.

This Court has heard from Mr. Austin and I think there's no question as to the accuracy of these images. And I also think there is no question that it will assist the trier of fact.

The only real objection that $I$ can envision would be in the area or the point where we talk about it being cumulative; that is, the State even recognizes that we do reach a tipping point that there may be a time when too many demonstrative exhibits are being offered.

But to reach that level, Judge, we're talking about so far down the path of relevance and so many exhibits, that we really aren't talking about a relevancy issue anymore; we're talking about the same exhibit being shown over and over. The State certainly doesn't intend to do that.

That's why these are State exhibits. That's why these are animations rather than simulations. And let me just parenthetically, Judge, describe for the Court and argue that we aren't talking simulations we're talking animations, which are simply representations of objects that are shown within them and that includes the animation.

Simulations, Judge, are when a computer is asked to draw conclusions from data. Those are the reconstructions and the like and that isn't what we're talking about here. This Court
need not approach any analysis about the science that's involved since that appears to be unconverted.

And so for this hearing, Judge, I am asking the Court rule on admissibility of the scene images, both interior and exterior, as being of the accuracy contemplated by a trial court. They will assist the trier of fact and there is no risk of a fairness problem. Mr. Strang is free to describe or supplement any of these animations or computer -- excuse me, we're talking about computer images, with photographs.

We are not prohibiting the defense, nor have we ever, of the creation of their own diagrams or their own renderings. These are State exhibits and the jury will certainly be told that. So we're asking the Court, again, rule on the admissibility of the -- both the interior and exterior property images.

As far as the skeletal images, I appreciate, again, Mr. Strang's concession and withdrawal of his objection. Dr. Eisenberg, I'm sure, will talk about the bones and those all appear accurate representations.

And then, finally, Judge, as to the animations, that is the moving images, the 5200 images that are placed side by side, in lieu of, or instead of, a jury view; I don't know what better way we could have created something to show the jury spatial relationships, relationships of evidence to known and fixed objects.

There's nothing that $I$ believe that is unfair or prejudicial in what we have seen. And so, not just for opening statements, your Honor, but when other witnesses may be asked to use these images, I will ask leave of the Court to be allowed to do that.

Let me also assure the Court and Mr. Strang that I expect that we'll still have to deal with relevance or materiality issues, especially with things like the garage, or trusses, or the like. But as far as whether or not these images are admissible, the unbalance and Exhibit 4 are all of the images that have been provided to the Court. With the testimony, which I would ask the Court to adopt, of Mr. Austin, we'll ask the Court accept those as demonstrative evidence in this case. That's all

I have.
THE COURT: Mr. Strang.
ATTORNEY STRANG: I'm in full agreement with Mr. Kratz that animation presents no separate problem; that is, if the image is fair and not materially misleading and, therefore, potentially helpful to the jury and the ability to move or change the point of view in the image is not objectionable.

And I disagree that there's no simulation involved here, but there certainly is no dynamic simulation in the sense we don't have a 747 taking off and then a depiction of a catastrophic failure and resulting explosion, for example.

The simulation we do have is the removal of the rooftops, which is a simulation. Now, that isn't so much my problem as it is things like highlighting parts of a truss or, you know, labeling things in an editorial and potentially misleading kind of way. So I don't know, although there is some simulation here, I don't know that it's a problem in and of itself.

The real problem where this stops becoming helpful to a jury is where it tends to
mislead a jury into believing that the scene looked very different than it actually looked. And that's primarily an issue of the garage, which if it can't be offset by good photographs of the garage as it actually was during the evening of November 5, I think there we do have something that's not helpful to the jury because it confuses or misleads the jury.

And the Court either would have to exclude that or be very careful about both the cautionary instruction with it and any labeling. I would ask the Court to exclude altogether any highlighting as really not helpful and, indeed, affirmatively unhelpful.

THE COURT: All right. The parties have both cited to the Court to the case of State vs. Peterson, 1998 Court of Appeals case. And although that case deals with a videotape that was taken later, the Court agrees that much of the rationale and the explanation of the law in that case appears to apply here.

The Court in that case indicated that before a videotape demonstration could be admitted, it would have to be demonstrated that it was conducted under conditions reasonably
similar to the conditions existing at the actual event. The same standard I think will apply here; that is, the animations, are they reasonably similar to what the appearance was at the scene at the time.

The case goes on to provide, even if this foundation is established, the trial court may, in its discretion, include the videotape demonstration upon a finding that the probative value of the tape is outweighed by its prejudicial affect. As I understand the defense, that may be part of its argument with respect to the garage.

At this point in time, the parties have asked for guidance and I'm going to attempt to give some guidance. It's difficult. I'm not in a position to address the motion to the extent it asks me to specifically exclude something, because I don't have enough foundation.

For example, the garage. At this point, I don't know enough about the evidence to know what the significance of clutter in the garage is going to be. I would say at this point, based on the defense's concern, $I$ would want to see $a$ foundation from the State laid before that
particular image would be allowed in. That's an image that shouldn't be used as part of an opening statement presentation. With respect to some of the other concerns expressed by the parties, for example, the concern that the jury might feel that the animation shows holes in the burn barrels; there's further language in Peterson where the Court says, if enough of the obviously important factors in the case are duplicated in the experiment and if the failure to control other possibly relevant variables as explained and if the jury is aided, the Court should let the evidence in.

As I viewed that particular exhibit, I
wasn't struck by the fact that it looks like there's holes in the burn barrel, but I agree from looking at it that perhaps that's a possible conclusion the juror could come to. In the Court's mind, that type of thing can be fairly easily explained away by simply saying that that type of detail is not attempted to be shown by this exhibit. In many cases, I suspect there's going to be photographs that do provide more detail and can certainly help put any animation
into perspective for the jury.
With respect to the concerns about any labeling that is disputed, it seems to me that's easily enough addressed by requiring a witness to lay a foundation before any labeling comes in, unless it is agreed by the parties ahead of time. It certainly wouldn't be unusual for a witness to get up to a blackboard at a trial and draw a diagram and say here is where $I$ found the key or whatever it was. And as long as there is a witness that testifies to the location of something like that, it seems to me that the computer aided images can be a useful means of showing the jury what it is the witness is testifying to.

Something like the truss marks in the garage, which I have to confess at this point I have no idea what the significance of them might be, that type of thing would require foundation before an exhibit showing -- pointing an arrow to truss marks, would be admissible.

There would have to be a prior showing that there's a foundation that a witness found something there and also the Court would have to hear any objections as to relevance. I don't
know what relevance marks on a truss might have.
With respect to the exhibits showing approximate locations, the labels would depend on, No. 1, the significance of a precise location. If there's a rake or a mallet in a yard and whether it's one foot one way or the other doesn't make a tremendous difference. Approximate location may well be enough. If its location is vital and its precise location can not be determined, that could be a different story.

I'm not sure, based on the evidence presented and what I know at this point that I can provide the parties with much more guidance. It appears that the defense is willing to acknowledge the concept of the relevance of some of these computer exhibits and that there's -objections are only going to be raised to certain exhibits. That's all the guidance I can give the parties at this point.

ATTORNEY STRANG: I can help a little bit more too, just to clean things up. Mr. Kratz has some actual photographs that he intends to use as PowerPoint slides in his opening and the photographs are not objectionable in the opening presentation.

THE COURT: Okay. Obviously, the opening has to be addressed at this point because the opening comes before there is any evidence. Are there -- Is there a dispute as to any computer generated exhibits that the State wishes to use in its opening that the defense objects to?

ATTORNEY STRANG: I have seen them. I'm trying to remember if the garage is one of the slides and I can't. I just don't remember.

ATTORNEY KRATZ: There is one image, Judge, of the interior of the garage. Let me -- I had offered it because this is where two bullet fragments were found. I can replace this, probably, with a photo, evidence tent 9 and 23A. And until that foundation is reached, if this will satisfy Mr. Strang and with leave of the Court, I will simply replace this with a photo. There's nothing special about this, Judge, that I have to --

THE COURT: Well, again, for further guidance of the parties and I -- I have some reservations, because at this point Mr. Strang is indicating there may not be any photos that show what it really looked like. But if you had a photo that showed how cluttered the garage was and it was followed immediately by an exhibit such as this,
just to show the location of the evidence, the jury would then have both an idea -- a clear idea from this exhibit of where the evidence was found and a clear exhibit -- idea from the photo of exactly what the garage looked like and I would probably admit both of them.

ATTORNEY KRATZ: I intended to do that. And, in fact, Judge, you have this photo of the garage. And, in fact, in my opening, it is intended to put the computer animation right after this photo. This is a March 1st photo. Does show the clutter. Shows tent 9, does not show tent No. 23, which, for the Court's information, it would be -or the second bullet.

THE COURT: Is the defense satisfied that if the other exhibit immediately follows this one that it's not objectionable? I'm assuming this is what the defense means by clutter; it would qualify as clutter in my book.

ATTORNEY STRANG: Yeah, and there was -- a whole vehicle is missing here, of course. This is in March. But -- Well, let me say this, I mean, I have no objection to the use of this photograph in the opening statement. This is something that's going to be admissible and, indeed, we have
stipulated the foundation or authenticity -authenticity I should say of I think every photograph the State wants to offer. This would be relevant.

THE COURT: Well, for purposes of ruling on the opening, I will, since I'm seeing both exhibits now, if this exhibit is part of the opening and if the objection to the garage photo is that it doesn't accurately depict the amount of clutter in the garage, if the computer exhibit immediately follows this one, I think it's allowable. To me, the combination of the two adequately informs the jury of other relevant variables that have to be explained and this photo certainly appears to explain those variables.

ATTORNEY KRATZ: Very well, thank you, Judge. Do I understand, then, that the balance of the images that have been provided both to counsel and to the Court will be met without objection?

THE COURT: Well, I think Mr. Strang objected to a series of labeling items. Possibly --

ATTORNEY KRATZ: No, for opening, Judge.
ATTORNEY STRANG: Oh, for opening.
ATTORNEY KRATZ: For my opening images, that's what we're talking about now, I thought.

ATTORNEY STRANG: What other images?
ATTORNEY KRATZ: There's one of the house, this one.

ATTORNEY STRANG: I didn't think there was any problem with that image.

ATTORNEY KRATZ: Very well, thank you.
THE COURT: I would say this, if you are showing that in the opening and if there's a series of pieces of furniture that are missing and I see this one appears to have more furniture than the other one I looked at, but it would be helpful in the opening to at least make a mention to the jury of limits that apply to the animation. Since they will be seeing it at a time when they haven't received any evidence.

ATTORNEY KRATZ: Very well, thank you. That actually takes care of two of our motions today.

THE COURT: Are there any other items related to the computer generated animations that require addressing at this time?

ATTORNEY KRATZ: I will -- And I appreciate the Court's direction and general statement as to admissibility. I will continue to work with Mr. Strang between now and next week, when offered.

I suspect that Trooper Austin will give a version of what he did today and perhaps the non-objectionable images can be shown. And, then, before and until those foundations are laid, we can address those more objectionable images as the trial unfolds. That seems to be the most reasonable approach. But, once again, I will discuss that with Mr. Strang.

THE COURT: All right. There is one other issue on the agenda today and that was the original instructions or the preliminary instructions to be given to the jury prior to trial. I have provided the parties previously with a draft of instructions the Court was proposing to give.

The statute that covers this provides that, if the Court gives additional instructions beyond the ones specified in the statute, they shall be disclosed to the parties before they are given. And either party may object to any specific instruction or proposed instructions of its own to be given prior to trial. It's my understanding at least the defense had instructions it wished to submit; I don't know about the State.

But given the hour and the fact I'm not sure what the parties will be doing this weekend,
but I know I will be in my office, let me suggest this, if either party wishes to either object to instructions I have included or propose additional instructions that it requests be given, you can put those in a Word document and email them to me. I will get them this weekend and on Sunday I will email back to you the proposed opening instructions that I will give, after consideration of any suggestions from either party. Will that work?

ATTORNEY GAHN: I just have one quick one that I think would solve it all if we could do it, if you want to just hear about it. One thing that I propose through it, under the 110, under your first degree intentional homicide, when you have elements of the crime, $I$ think that it states here that before the jury can find the defendant guilty -says the defendant or Brendan Dassey. I think that's troublesome because $I$ think we need to cross out Brendan Dassey. We have to focus on -- because the jury could find Brendan Dassey committed this and by reading this also find Steven Avery guilty. THE COURT: Well, just wait a minute. The State is the party charging party to the crime here. And I believe that, granted, you wouldn't get,
reading from just that sentence alone, what you are asking for, but if you move on to the jury's instruction portion, you have to find you have to be satisfied by a reasonable doubt that the defendant committed both elements of the crime or that he intentionally aided and abetted.

If you're going by the party to the crime theory, the first element is that someone else in this case, Mr. Dassey, committed the crime. And then you have to go on to find that Mr. Avery aided and abetted. I think that's taken from the form instruction.

ATTORNEY GAHN: I read it as if, if they were to find Mr. Dassey committed the offense that they could find the defendant -- I just think it would be clearer if we left the name out of Brendan Dassey and just said the defendant comma and either do one of four things: Either put as a party to a crime, or put as a principle, or as an aider and abettor, or put as a person concerned with the commission of a crime, or fourth, as a person who is a party.

I have seen it done all those four different, or in concert with another, and leave the name Brendan Dassey out. I wonder what

Mr. Strang thinks of that because I don't think it's beneficial to Mr. Avery.

THE COURT: Well, Mr. Strang.
ATTORNEY STRANG: I do have my own objections to it from a different angle. And I like -- I like the Court's idea of putting this in writing. And if I -- I think Word comes as part of the Windows Office Suite, so it's probably on this box somewhere. I always use Word Perfect.

THE COURT: I think even if you send it in Word Perfect I could open it.

ATTORNEY STRANG: In other words, the Court does not want it in PDF because that would require retyping.

THE COURT: Right.
ATTORNEY STRANG: Okay.
THE COURT: Yes.
ATTORNEY STRANG: Let me figure -- I will try -- I will try to figure out how to get into Word and address it. But -- But as to a preview, I think the Court has created a duplicity problem by -- by joining together the first degree intentional homicide and the mutilation of a corpse counts.

And I, too, have some concerns about the way that Brendan Dassey is added to the
substantive elements under 1010. Although, I mean, Brendan Dassey is the person as to whom Steven Avery is supposed to be the party to the crime. I mean, that clearly is the State's theory, so I don't know that Mr. Dassey ought to come out altogether.

THE COURT: If both parties prefer to -- I joined them because they are both charged as a party to the crime. If both parties want completely separate instructions for each one, I will honor that request.

ATTORNEY STRANG: Let me work on it. We'll obviously copy each other on any emails. What I can do, the Court has a note, the pages aren't numbered, but the Court asked, does the defense wish that I notify the jury of the agreement that Mr. Avery had an unreversed felony conviction, on the felon in possession charge?

THE COURT: Yes.
ATTORNEY STRANG: And I do, I think we ought to be just upfront with the jury about that.

THE COURT: Okay. I don't know that that's -- I think I have been informed that it was the intention of the parties to place that on the record, but $I$ don't know that it's been done yet.

ATTORNEY STRANG: My intention is to stipulate away the second element of felon in possession of a gun. We will not challenge the second element. The jury should consider it proven; that is, that the defendant had been convicted of a felony before November 5, 2005.

THE COURT: As long as I have your comments by 7:00 Sunday morning, that will be fine.

ATTORNEY STRANG: We can exchange email addresses off the record.

THE COURT: Okay. Anything else this afternoon?

ATTORNEY KRATZ: We'll probably be submitting ours this afternoon yet, Judge, but if I could just have a moment.

ATTORNEY FALLON: Your Honor, there is one other matter that I would -- I think the Court is aware, that $I$ will be submitting correspondence to the Court and Mr . Strang will respond at some time. Hopefully we can get that done by Sunday, but that may be a tall order, as well. But there's that one other matter that I will be sending correspondence on.

THE COURT: I understand. And I understand that sometime before Monday morning I'm going to
receive something on that; that's my understanding. ATTORNEY STRANG: Maybe -- The jury is coming at -- or we're starting at 9:00 with the jury on Monday?

THE COURT: Yes.
ATTORNEY STRANG: Maybe we ought to be here at 8:00.

THE COURT: I think that would be -- well, at least by 8:30.

ATTORNEY KRATZ: We'll be here at 8:30; that's fine, Judge.

THE COURT: Okay.
ATTORNEY KRATZ: That's all. Thank you.
THE COURT: All right. We're adjourned for today.

```
                                    (Proceedings concluded.)
```

STATE OF WISCONSIN ) ) ss COUNTY OF MANITOWOC )

I, Diane Tesheneck, Official Court Reporter for Circuit Court Branch 1 and the State of Wisconsin, do hereby certify that I reported the foregoing matter and that the foregoing transcript has been carefully prepared by me with my computerized stenographic notes as taken by me in machine shorthand, and by computer-assisted transcription thereafter transcribed, and that it is a true and correct transcript of the proceedings had in said matter to the best of my knowledge and ability.

$$
\text { Dated this 10th day of September, } 2007 .
$$

Diane Tesheneck, RPR Official Court Reporter

| 0 | 5 | 84/22 103/23 104/7 105/22 136/25 |
| :---: | :---: | :---: |
| 000 [1] 70/17 | 5 feet [1] $94 / 2$ <br> 5,000 [1] $68 / 22$ <br> 50 [2] $91 / 2097 / 22$ <br> $5200[3] ~ 65 / 466 / 23 \quad 122 / 2$ <br> 54 [2] $11 / 917 / 18$ <br> 55 feet [1] $97 / 25$ <br> 56 [3] $107 / 15108 / 5 \quad 108 / 5$ <br> 5 th [3] $35 / 2042 / 179 / 17$ <br> 6 | $\begin{aligned} & \text { addition [3] } 18 / 1227 / 1082 / 17 \\ & \text { additional [7] } 18 / 2021 / 921 / 16 \\ & 60 / 1289 / 17 \\ & 133 / 15 \end{aligned} 134 / 4$ |
| 05[3] 1/6 4/3 29/24 |  |  |
| 1 |  |  |
| 1/2 [2] 34/4 54/2 |  | address [7] 25/8 25/24 32/25 <br> 112/25 125/17 133/4 136/20 |
| 10 [5] 34/4 39/16 56/23 56/25 78/9 |  |  |
| 100 [2] 11/891/20 |  | addressed [4] 7/3 26/16 127/4 <br> 129/2 |
| 1010 [1] 137/1 |  | addresses [1] 138/10 addressing [1] 132/21 |
| 10th [1] 140/15 | 6 |  |
| 110 [1] 134/14 | 60 [3] 43/3 43/4 92/6 |  |
| 111 [1] 3/14 | 600 [1] 69/8 | adjourn [1] 28/8 |
| 12 [2] 5/1878/17 | 69 [1] 3/12 | adjourned [1] 139/14 |
| 1200 feet [1] 43/8 | 6th [1] 79/17 | adjust [1] 94/9 |
| 12th [3] 42/3 79/17 83/22 | 7 | admissibility [12] 28/22 30/13 |
|  |  | 30/1731/1 $118 / 14118 / 19118 / 21$ |
| 150 [1] 74/22 | 762 [1] 16/10 | 119/6 119/14 admissible [9] $31 / 3$ $31 / 8$ $31 / 89 / 20$ |
| 16 [5] 5/15 14/17 57/18 57/19 | 7:00 Sunday [1] 138/8 | 118/17 119/1 119/5 122/20 127/21 |
| 59/14 | 7th [1] 79/17 | $130 / 25$ |
| 160 [1] 74/22 | 8 | admission [1] 38/1 |
| 17 [1] 96/3 |  | admit [1] 130/5 |
| 18 [1] 97/1 | 8:00 [1] 139/7 | admitted [3] 38/5 64/4 124/24 |
| 1990 [1] 13/7 | 8:30 [2] 139/9 139/10 | adopt [1] 122/23 |
| 1991 [1] 13/7 | 9 | advantage [1] 48/15 |
| 1996 [1] 34/3 |  | adversary [1] 49/22 |
| 1998 [2] 119/11 124/17 | 90 [5] 8/3 8/13 8/15 8/15 40/23 | advocate [1] 83/2 |
| 1:30 [3] 28/11 29/5 29/19 | 904.03 [1] 118/24 | aerial [2] 36/14 98/16 |
| 1st [1] 130/11 | 9:00 [1] 139/3 | affect [1] 125/11 |
| 2 | A | affirmatively [1] 124/14 |
| 20 [4] 12/5 59/1 59/4 59/13 | A-u-s-t-i-n [1] 33/ | $\begin{array}{llll}\text { African [4] } 8 / 18 & 9 / 3 & 10 / 20 & 13 / 6 \\ \text { African/American } & \text { [3] } & 8 / 18 & 10 / 20\end{array}$ |
| 20 feet [1] 94/12 | abetted [2] 135/6 135/11 | 13/6 |
| 2003 [1] 14/9 | abettor [1] 135/20 | after [12] 43/11 43/12 46/5 60/17 |
| 2005 [9] 35/20 78/17 78/23 79/17 | abeyance [1] 9/14 | 62/23 62/23 103/2 106/1 108/19 |
| 105/4 105/11 105/21 $115 / 7$ 138/6 | ability [3] 69/18 123/7 140/14 | 111/17130/10 134/9 |
| 2006 [3] 105/3 105/13 105/23 | above [1] 45/12 | afternoon [12] 28/8 28/12 28/16 |
| 2007 [3] 1/9 15/22 140/15 | Academy [4] 34/8 90/10 95/20 | $29 / 2530 / 530 / 830 / 2136 / 168 / 24$ |
| 222 [1] 119/12 | 95/23 | $110 / 19138 / 12138 / 14$ |
| 23 [4] 59/23 59/24 72/6 130/12 | accept [2] 63/21 122/24 | again [35] 9/17 26/18 33/19 37/18 |
| 23A [1] 129/14 | acceptable [2] 53/21 109/22 | 41/19 43/21 46/21 48/8 48/18 |
| 24[1] 72/8 | access [5] 27/25 28/2 40/6 41/5 | 49/4 52/4 54/20 59/15 59/22 |
| 26 [1] 15/22 | 103/4 | $61 / 2462 / 164 / 2365 / 768 / 16$ |
| 2d [1] 119/12 | accomplish [1] 59 | 73/22 77/6 79/22 84/4 91/8 93/16 |
| 3 | accomplished [1] 10/10 accordingly [1] 93/13 | 96/23 97/3 101/5 103/11 107/10 |
| 30 [6] 3/7 5/10 8/25 9/6 62/17 | accounts [1] 26/25 | $133 / 7$ |
| 64/13 | accuracy [8] 42/22 43/9 114/10 | against [3] 9/24 18/24 106/12 |
| 31[9] 51/13 51/15 51/25 52/13 | 114/11116/3119/16119/23121/7 | age [5] 11/16 12/5 12/6 18/17 19/1 |
| 86/6 86/17 86/22 108/23 115/7 | accurate [11] 41/9 41/14 42/24 | agenda [1] 133/9 |
| 32 [2] 51/15 99/17 | 43/5 69/16 75/2 75/4 75/5 86/23 | agents [1] 88/5 |
| 33 [1] 3/11 | 118/5 121/25 | ago [3] 17/1 46/11 63/18 |
| 36-A [1] 101/1 | accurately [2] 14/21 131/9 | agree [6] 30/24 59/20 75/4 77/16 |
| 360 [1] 43/2 | acknowledge [1] 128/16 | 78/4 126/17 |
| 37 [2] 103/9 103/17 | acknowledged [1] 9/19 | agreed [2] 16/2 127/6 |
| 38 [1] 103/9 | acre [1] 113/4 | agreement [7] 15/15 25/6 29/16 |
| 381 [3] 1/6 4/3 29/24 | across [2] 66/11 78/11 | 115/13 115/17 123/3 137/16 |
| 3:30 [1] 29/5 | acting [1] 98/3 | agrees [1] 124/19 |
| 3D [11] 40/5 40/21 46/12 46/18 | activities [1] 34/17 | ahead [10] 38/10 39/14 44/15 46/4 |
| 46/19 48/15 49/12 49/15 76/3 | actual [11] 22/7 22/14 22/15 80/4 | $46 / 552 / 355 / 2365 / 1998 / 19$ |
| 79/2 93/11 | 93/14 102/25 103/3 104/19 116/11 | 127/6 |
| 4 | 125/1 128/23 | aided [5] 43/18 126/13 127/13 |
| 40 [1] 113/4 | 48/24 52/16 66/21 68/10 76/12 | aider [1] 135/19 |
| 41 [7] 54/15 54/16 54/18 54/19 | 77/25 79/13 79/24 80/17 87/22 | air [3] 55/10 106/12 113/8 |
| 54/23 84/4 85/7 | 88/7 88/21 92/15 93/7 100/17 | alarmed [1] 78/20 |
| 4100[3] 42/17 49/7 $119 / 8$ | 104/16 113/23 117/2 124/2 124/5 | alert [1] 32/1 |
| 44 [2] 11/16 103/21 | 132/17 | algorithm [2] 95/9 114/1 |
| 449 [1] 119/12 | add [9] 9/22 15/14 30/23 46/19 | algorithms [1] 95/12 |
| 45 [2] 105/2 105/3 | 49/11 89/17 89/24 102/20 108/23 |  |
| 4:00 [1] 29/5 | added [9] 67/9 67/16 67/17 84/3 | allow [5] 47/11 50/18 55/25 117/1 |

allow... [1] 117/23
allowable [1] 131/11
allowed [3] 36/5 122/14 126/1
allows [6] 32/6 46/18 52/15 57/22
59/18 80/17
alone [1] 135/1
along [3] 40/6 86/10 86/11
already [4] 31/11 32/14 32/24
112/11
altered [2] 69/12 110/17
alternate [1] 5/17
alternating [1] 5/13
although [10] 9/11 11/7 45/22
53/25 59/13 94/9 106/15 123/22
124/17 137/1
altogether [2] 124/12 137/6
always [1] 136/9
Amendment [1] 10/1
American [3] 8/18 10/20 13/6 among [2] 75/21 105/20
amount [6] 81/2 101/14 109/5
109/18 110/16 131/9
analysis [5] 16/21 20/5 24/5
118/24 121/1
analyze [1] 24/13
ancestry[2] 8/21 9/8
and/or [1] 103/19
angle [5] 41/1 56/2 59/15 70/17 136/5
angles [1] 40/4
animation [18] 29/9 30/19 64/5
64/12 64/1 8 64/23 66/22 68/21
68/23 69/6 80/5 110/11 120/21
123/4 126/7 126/25 130/10 132/13
animations [16] 30/10 30/13 31/2
31/8 62/11 62/11 63/1868/25
112/1 113/11 120/15 120/19
121/11 122/2 125/3 132/20
another [11] 12/3 27/13 49/25 52/9 52/10 60/9 63/13 66/10 75/23 101/5 135/24
answer [4] 6/16 6/21 $11 / 8$ 19/22
answered [1] 18/6
anthropologist [2] 60/9 69/3
anticipate [2] 53/14 111/15
anticipated [1] 22/22
anybody [3] 39/2 55/25 56/1
anymore [1] 120/10
anyone [6] 6/17 6/20 7/3 11/10
17/23 27/1
anything [24] 11/5 20/14 21/22
25/9 27/14 28/7 37/25 55/13 82/9
$82 / 16$ 83/15 84/22 89/20 90/14
96/7 96/9 96/23 96/24 104/24
104/24 $115 / 6117 / 18117 / 19$ 138/11
apologize [1] 103/25
Apparently [1] 105/14
Appeals [1] 124/17
appear [4] 9/6 18/8 64/17 121/25
appearance [1] 125/4
appearances [3] 1/12 4/4 30/1
appeared [4] $1 / 23$ 8/17 8/20 64/20
appearing [4] 4/7 4/8 4/12 114/3
appears [16] 4/6 15/8 17/3 18/17 18/18 18/21 22/1 30/2 39/15
85/12 101/3 121/2 124/20 128/15
131/14 132/10
apple [1] 80/19
apples [1] 80/20
Appleton [1] 28/13
application [2] 19/6 47/9
applied [5] 47/3 47/7 48/2 61/21 72/14
apply [9] 16/20 20/4 33/6 47/18
47/24 118/21 124/21 125/2 132/13
applying [1] 20/22
appreciate [4] 48/21 118/13
121/22 132/22
approach [3] 19/13 121/1 133/6
approached [1] 89/24
approaches [1] 110/15
appropriate [2] 61/21 65/15
approval [1] 61/22
approximate [8] 97/4 98/8 102/6
103/10 106/8 $115 / 20$ 128/3 128/8
approximately [2] 8/3 36/6
approximating [1] 101/7
approximation [1] 96/21
area [23] 45/10 48/20 57/1 57/4
57/6 60/7 61/1 61/4 61/13 67/20
67/21 91/18 91/24 91/25 97/24
98/20 101/16 101/20 104/9 104/11
107/12 108/15 120/2
areas [3] 29/15 50/4 103/10
argue [1] 120/17
argues [2] 18/23 18/25
argument [10] 18/20 21/10 21/13 23/22 29/9 111/16111/17111/25 116/2 125/12
arguments [3] $3 / 1426 / 5117 / 3$
around [12] $32 / 5$ 55/8 55/8 59/1
65/9 76/12 80/12 92/10 93/11
94/2 97/22 106/12
arranged [1] 99/13
arrangements [2] 26/12 26/14
arrested [3] 11/11 11/14 17/24
arrow [5] 61/7 66/2 108/23 112/16 127/20
arrows [3] 52/22 53/2 86/19
Article [1] 10/2
articles [1] 27/8
articulate [2] 17/10 113/13
articulated [1] 19/4
artistic [2] 82/10 82/15
artistry [1] 81/2
aside [2] 9/23 73/19
asked [33] 35/10 44/19 48/13
48/14 49/6 51/7 52/14 54/10
54/20 55/2 57/24 58/10 58/11
60/5 60/8 60/11 60/21 60/25
62/11 65/17 69/13 83/20 89/25
96/14 101/24 102/7 102/19 103/2
108/21 120/23 122/12 125/15
137/15
asking [10] 40/9 40/1763/21
73/14 77/12 83/24 109/2 121/5
121/18 135/2
asks [1] 125/18
aspects [2] 88/21 89/1
assess [1] 20/7
assigned [3] 34/7 74/2 93/19
assigns [1] 41/2
$\begin{array}{llll}\text { assist [12] } & 35 / 11 & 36 / 1050 / 11 & 60 / 9\end{array}$
61/2 64/25 69/1 90/10 98/21
118/22 119/25 121/8
assistance [5] 53/13 55/16 70/5 71/20 78/5
Assistant [2] 4/9 4/11
assisted [1] 140/10
assists [1] 40/14
assume [4] 28/17 42/19 114/23 115/1
assuming [1] 130/17
|assure [1] 122/15
attack [1] 81/14
attempt [2] 21/3 125/15
attempted [3] 18/14 19/10 126/22
attention [2] 43/21 46/21
attorney [9] $1 / 181 / 203 / 113 / 12$
4/7 4/1 0 4/11 30/3 89/21
attractive [3] 81/5 81/7 81/15
August [2] 5/3 6/5
AUSTIN [29] 3/10 28/23 32/19
33/10 33/15 33/17 33/21 33/24
$34 / 935 / 1036 / 237 / 338 / 1539 / 7$
42/14 44/13 55/15 60/6 64/5
65/18 65/19 69/13 69/21 70/2
112/24 119/1 119/22 122/24 133/1
Austin's [1] 38/13
authenticity [2] 131/1 131/2
authority [2] 8/8 16/13
available [4] 28/24 88/7 95/18 119/18
AVERY[42] 1/7 1/22 4/2 4/15
10/19 $13 / 3$ 13/5 $16 / 15$ 23/7 29/23 $30 / 635 / 1335 / 2236 / 236 / 836 / 16$ $39 / 1841 / 1541 / 1842 / 242 / 18$ 44/8 44/20 44/25 49/12 57/4 57/8 57/21 63/2 63/4 66/15 67/17 67/19 68/14 68/18 93/9 113/3
134/22 135/11 136/2 137/3 137/16
Avery's [6] 52/1 54/9 54/11 60/2 86/24 110/6
avoid [1] 27/15
aware [5] 14/8 20/17 91/23 101/24 138/1 8
away [3] 91/10 126/21 138/2
axis [3] 70/13 70/14 70/14

## B

back [43] 7/15 7/20 14/13 15/1
15/16 21/23 25/6 25/10 26/10
28/11 28/13 45/1 55/10 59/8
59/10 60/1 60/4 62/19 65/9 67/14
68/14 70/12 70/24 71/7 78/5
85/14 89/20 91/17 94/3 94/8
100/11 100/17 102/20 102/23
105/10 105/14 106/2 106/5 111/13
111/18111/20111/24134/7
backed [1] 111/2
background [1] 73/9
backside [2] 60/3 65/10
bailiff [7] 4/22 6/25 7/12 7/15 7/19 26/15 27/20
balance [1] 131/17
Barb [6] 57/5 57/14 63/5 68/1
71/25 77/8
Barbara [3] 4/25 6/4 60/3
Barber [2] 5/7 6/7
barrel [21] 58/11 58/14 58/17
58/23 68/16 68/18 68/19 72/21
$73 / 373 / 1173 / 1573 / 2474 / 3$
75/12 76/6 76/7 76/21 81/9
114/24 114/25 126/17
barrels [17] 68/3 68/4 68/8 68/9 68/11 68/13 71/24 72/11 72/24 73/7 76/15 76/19 77/9 77/20
77/25 114/22 126/7
base [1] 61/16
based [19] $12 / 1314 / 1916 / 618 / 25$
20/10 25/11 42/19 96/19 97/16
98/9 103/1 1 103/18 103/19 105/9
105/22 106/11 115/9 125/23 128/12
basic [1] 101/16
basically [1] 40/6

37/15 37/17 39/11 95/1
bit [9] 29/7 38/12 39/5 60/6 62/10
66/19 70/3 112/21 128/21
black[4] 9/4 37/12 48/2 104/1
blackboard [2] 45/23 127/8
blackjack [3] 106/9 106/10 106/16
bleach [2] 103/12 103/17
blood [14] 22/5 23/2 23/3 23/7
23/14 23/23 24/3 24/5 24/6 24/7
24/13 104/6 108/16 108/17
blossoms [1] 80/20
blown [1] 116/25
blue [4] 102/19 103/24 104/7 104/11
board [3] 43/16 44/4 119/4
bone [13] 61/7 61/8 61/9 61/21
61/24 67/22 94/17 94/19 94/19
94/20 94/21 107/2 107/10
bones [4] 61/4 112/12 112/19 121/24
book [1] 130/19
border [1] 55/8
both [28] 10/11 15/2 15/10 24/13
29/2 30/15 32/23 40/13 49/9
53/17 57/22 58/14 62/3 70/19
$74 / 13$ 103/14 121/6 121/19 124/10
124/16 130/2 130/6 131/6 131/18
135/5 137/7 137/8 137/9
bother [2] 102/4 102/5
bothering [1] 38/23
bottom [3] 57/13 71/17 78/11
bound [1] $8 / 6$
box[3] 25/21 50/24 136/9
boxes [1] $85 / 18$
boy [1] 73/5
BRANCH [5] 1/1 7/11 7/13 7/22 140/5
break[3] 15/16 19/10 111/12
Brendan [7] 134/18 134/20 134/21
135/16 135/25 136/25 137/2
brief [3] 14/25 28/9 111/16
briefly [8] 34/25 40/15 50/14 55/1 61/14 70/2 92/13 106/21
bring [6] 25/9 25/16 37/11 43/18 46/16 66/5
bringing [1] 21/23
broken [1] 75/16
Brotski [1] 5/4
brought [3] 25/22 27/11 34/9
building [3] $45 / 847 / 548 / 10$
buildings [2] 44/24 54/9
bulk [2] 39/21 88/15
bullet [2] 129/12 130/14
burden [2] 17/9 19/15
burn [31] 58/11 58/14 58/17 58/22
67/21 68/2 68/4 68/8 68/9 68/11 68/13 68/16 68/18 68/18 71/24 73/6 73/24 74/3 75/12 76/5 76/7 76/15 76/19 77/9 77/20 77/25 114/22 114/24 114/25 126/7 126/17
business [1] 44/24
BUTING [4] 1/20 4/16 22/25 116/16
BUTING-Present [1] 1/20
button [1] 27/12
buy [1] $82 / 15$
buzz [1] 81/21
buzzing [1] 38/21

## C

cabinet [1] 55/12
CAD [5] 43/20 76/10 77/13 92/21 93/7
calculates [2] 41/2 71/14
called [8] 33/10 34/13 39/22 39/23
43/19 46/17 61/8 92/22
calls [3] 4/1 12/17 29/22
CALUMET [5] 1/5 3/6 4/6 29/21
30/2
camera [7] 57/20 59/1 66/11 98/14
98/25 113/17118/2
cameras [1] 32/22
cannot [2] 19/24 85/2
capabilities [1] 79/22
capability [1] 64/22
captioning [1] 104/3
capture [1] 75/18
capturing [1] 76/4
car [3] 24/14 24/22 48/3
Caravan [5] 58/2 58/4 65/23 66/1
66/14
care [1] 132/17
careful [1] 124/10
carefully [1] 140/8
Carl [2] 5/6 6/7
carpeting [1] 102/12
carried [1] 91/10
case [78] 1/6 4/2 4/3 4/8 5/16 5/19 6/1 6/9 6/15 6/17 6/19 6/20 7/18 10/22 14/8 14/9 15/8 16/7 16/8 16/9 16/19 16/21 17/2 17/12 17/12 18/10 19/3 19/8 19/14 19/20 20/10 20/24 21/8 21/21 24/24 26/20 26/25 27/1 27/8 27/14 27/16 27/19 28/2 28/4 29/23 35/10 35/18 43/7 43/19 47/16 48/12 52/12 56/5 58/8 60/10 60/19 61/21 69/5 73/22 79/21 83/9 89/13 90/13 96/9 97/20 101/12 101/23 108/13 119/10 122/25 124/16 124/17 124/1 8 124/20 124/22 125/6 126/10 135/9
cases [8] 8/8 47/11 47/23 48/13 48/14 113/9 113/9 126/23 casting [1] 78/11
catastrophic [2] 78/20 123/14 catch [1] 29/13
category [3] $15 / 1118 / 318 / 4$
Caucasian [1] 9/8
cause [5] 9/12 9/18 9/21 10/25 12/15
caused [2] 11/21 100/21
causing [1] 39/5
cautionary [1] 124/11
CCAP [1] 11/23
CD[3] 61/19 92/16 93/2
ceiling [1] 104/15
certain [9] $11 / 111 / 826 / 1881 / 1$
83/13 87/8 89/1 89/2 128/18
certainly [12] 19/25 21/6 43/15
61/4 72/7 119/1 120/12 121/17
123/11 126/25 127/7 131/14
certification [2] 34/23 35/6
certifications [1] 42/20
certify [1] 140/6
CF [3] $1 / 64 / 3$ 29/24
chairs [3] 87/11 87/13 87/23
chalk [1] 119/3
chalkboard [2] 45/24 46/2
challenge [11] 10/14 13/10 15/7
16/5 16/18 16/23 16/25 17/5 17/12 20/21 138/3
challenges [2] 5/12 17/11
challenging [2] 15/5 19/5
chance [2] 24/13 89/23
change [7] 41/1 41/1 66/5 66/10
68/12 78/20 123/8
changed [2] 64/20 66/7
changes [4] 63/12 66/18 68/6

## 69/1 1

changing [1] 62/21
charge [2] 18/13 137/18
charged [3] 11/12 17/24 137/8
charging [1] 134/24
check [1] 25/3
checked [2] 15/17 17/25
Cherri [1] 4/25
chest [1] 55/10
Chief [1] 19/9
child's [1] 62/19
Chilton [2] 28/8 29/19
chime [1] 65/14
chipped [1] 75/13
choice [1] 73/9
choose [1] 109/9
choosing [1] 74/20
choppy [1] 64/12
chose [1] 61/20
Chosen [1] 7/22
circle [6] 43/2 76/11 76/14 76/23 77/3 77/4
CIRCUIT [3] $1 / 1$ 1/11140/5
circumference [1] 76/5
circumstances [3] 20/16 20/17 20/23
cite [1] 119/12
cited [2] 16/9 124/16
citizen [1] 119/2
claim [1] 12/9
class [3] 13/4 13/9 16/5
clean [2] 52/13 128/22
clear [6] 22/19 24/16 24/17 24/25 130/2 130/4
clearer [1] 135/16
clearly [2] 8/20 137/4
Clerk [1] 4/21
clerks [1] 32/9
close [7] 11/10 17/23 61/24 68/23
81/13 106/23 $113 / 14$
closely [3] 13/12 60/11 61/5
closer [1] 59/17
closeup [1] 44/23
cluster [1] 77/9
clutter [6] 85/11 125/22 130/12
130/18 130/19 131/9
cluttered [2] 86/1 129/24
co [1] 92/6
co-workers [1] 92/6
cognizable [3] 10/15 13/4 13/9
collaboratively [1] 115/12
colleagues [2] 48/14 112/8
collect [1] 88/21
collecting [1] 35/8
collection [1] 114/5
collector [1] 43/16
color [11] 72/16 72/20 73/9 81/4
82/3 82/3 82/7 85/15 103/23
103/24 112/12
colored [2] 58/4 72/14
coloring [1] 104/7
colors [2] 47/20 82/22
combination [1] 131/12
$\begin{array}{lllll}\text { comes [4] } 43 / 8 & 127 / 5 & 129 / 3 & 136 / 7\end{array}$
comfortable [3] 102/12 102/13 107/8
coming [8] 7/20 20/1 36/20 38/6

38/21 45/5 100/4 139/3
comma [1] 135/17
comment [2] 9/1 13/21
comments [1] 138/7
commercially [1] 95/18
commission [1] 135/21
commitment [2] 19/2 26/23
committed [5] 14/5 134/21 $135 / 5$
135/9 135/14
common [4] 34/12 88/11 88/13
89/1
commonly [2] 45/15 45/18
communications [1] 60/16
community [3] 12/7 12/10 19/2
company [1] 39/23
compared [1] 51/2
compelling [1] 19/19
compensate [1] 71/14
compiled [1] 43/12
complete [6] 4/19 6/10 31/14 37/3
53/24 63/25
completed [4] 5/22 6/15 55/4 64/10
completely [2] 44/6 137/9
complexity [1] 119/16
compound [1] 96/3
compressor [3] 55/11 106/13 106/17
computer [30] 15/19 15/25 29/8
30/9 30/18 31/2 43/18 46/17
55/16 55/24 69/15 76/22 80/14
93/3 93/16 93/17 99/10 100/22
113/10 117/6 120/22 121/11
121/12 127/13 128/17 129/4
130/10 131/10 132/20 140/10
computer's [1] 73/8
computer-assisted [1] 140/10
computerized [1] 140/9
computers [3] 33/5 33/7 67/1
conceivably [1] 29/11
concept [2] 45/22 128/16
concern [7] 11/22 24/10 24/25
113/13 116/5 125/24 126/6
concerned [5] 12/3 114/10 114/11
115/23 135/20
concerning [3] 6/19 26/11 26/14
concerns [3] 126/5 127/2 136/24
concert [1] 135/24
concession [2] 13/3 121/22
concessions [1] 118/13
conclude [1] 86/24
concluded [1] 139/16
conclusion [3] 5/16 20/1 126/19
conclusions [1] 120/23
conclusive [2] 19/17 19/18
conclusively [2] 18/14 19/24
conditions [2] 124/25 125/1
conducted [1] 124/25
confess [1] 127/17
confident [1] 106/20
confirm [1] 93/22
confuses [1] 124/8
confusion [1] 22/2
connects [1] 94/19
consciously [1] 27/15
consider [3] 48/17 119/15 138/4
considerably [1] 112/5
consideration [1] 134/9
consistently [1] 74/7
Constitution [2] 10/1 10/3
Construction [1] 37/2
consumed [1] 23/16
consuming [1] 23/10
contact [1] 13/23
contacted [3] 35/14 36/1 92/17
contacts [1] 11/20
contained [1] 85/11
containing [2] 37/6 61/19
contemplated [1] 121/7
content [1] 112/17
contention [1] 117/22
context [2] 9/22 117/24
continue [1] 132/24
continues [1] 46/3
contrary [1] 82/9
control [6] 32/5 32/6 35/22 42/5 68/11 126/11
converse [1] 84/16
convicted [1] 138/5
conviction [1] 137/17
convictions[1] 18/12
Cooper [1] 24/24
coordinate [5] 40/7 46/12 46/13
46/13 71/16
coordinates [1] 41/2
copies [1] 86/12
copy [5] 33/1 36/22 37/12 53/16 137/13
cord [2] 77/19 77/23
cords [2] 97/3 115/19
corner [5] 44/23 45/4 45/12 62/20
113/4
corpse [1] 136/23
correct [43] 30/11 35/25 36/24
36/25 37/23 41/7 41/8 53/23
59/16 62/5 67/11 67/12 71/11
$74 / 2475 / 1976 / 2077 / 1177 / 23$
$80 / 2381 / 1982 / 2183 / 1283 / 17$
84/1 8 87/1 $888 / 10$ 89/10 90/12
95/15 95/22 96/16 96/25 97/5
99/12 101/9 102/2 102/17 102/18
103/24 104/19 105/1 110/8 140/12
correctly [2] 54/24 83/23
correlative [1] 10/2
$\begin{array}{llll}\text { correspondence [2] } & 138 / 18138 / 22\end{array}$
couch [1] 87/14
couches [1] 87/11
could [66] 11/7 13/24 14/11 21/16
28/11 33/17 34/19 34/25 39/9
$43 / 12$ 43/24 47/14 47/18 48/11
$52 / 853 / 654 / 1354 / 2156 / 361 / 3$
61/6 61/13 62/14 73/11 73/17
73/18 74/14 77/17 77/22 77/24
88/1 89/17 92/24 94/4 94/5 94/8
97/9 97/15 97/18 98/17 98/18
99/9 99/15 106/11 108/6 109/2
109/3 109/24 $110 / 2$ 110/5 110/21
111/5 115/12 116/25 117/4 117/8
117/8 122/5 124/23 126/19 128/10 134/12 134/21 135/15 136/11 138/15
couldn't [1] 109/12
$\begin{array}{lll}\text { counsel [12] } & 10 / 10 & 10 / 19 \\ 28 / 7\end{array}$
29/1 3 32/23 33/3 36/10 36/21
37/21 53/22 62/2 131/18
count [1] 8/13
countervailing [1] $118 / 24$
counts [1] 136/23
COUNTY [11] 1/1 $1 / 51 / 53 / 33 / 6$ 4/6 4/12 6/11 29/21 30/3 140/2
couple [2] 57/17 91/22
course [8] 8/13 27/17 31/4 31/6
31/25 91/15 95/4 130/21
court [94] 1/1 1/11 2/2 4/1 5/24
6/17 6/22 7/23 9/11 9/18 10/23
12/2 13/7 13/11 14/4 14/8 14/9
court... [77] 14/17 15/20 16/8
16/10 16/19 19/3 19/12 19/23
20/11 21/9 21/20 22/19 25/6 26/5 26/8 26/16 29/6 29/22 30/20 32/1 35/4 36/1 0 36/19 36/22 37/21
39/1 52/15 53/13 53/21 54/1 54/3
62/2 63/8 63/21 88/12 89/25
109/22 112/25 113/6 114/20 118/8 118/20 119/15 119/22 120/17
120/25 121/5 121/8 121/18 122/13
122/15 122/22 122/23 122/24
124/9 124/12 124/16 124/17
124/19 124/22 125/7 126/9 126/1
127/24 129/16 131/19 133/13
133/15 136/12 136/21 137/14
137/15 138/17 138/19 140/4 140/5
140/19
Court's [14] 16/6 20/7 22/2 24/10
25/11 31/22 53/14 58/7 101/17
116/6 126/20 130/13 132/23 136/6
Courthouse [1] 29/21
courtroom [5] 4/21 5/21 7/25 26/5 56/1
courts [1] 20/4
coverage [1] 26/19
covered [3] 32/24 85/22 86/1
covers [1] 133/14
crack [1] 88/23
cranial [1] 108/1
crash [5] 40/13 60/7 88/16 88/19 113/8
create [24] 35/3 36/5 46/8 46/18
49/25 50/17 60/12 60/17 60/21
60/25 62/11 62/15 62/18 62/24
63/3 64/7 66/24 66/25 69/18
76/10 76/14 76/23 90/5 95/12
created [13] 44/2 46/6 47/10 49/10
53/16 61/15 62/1 65/13 69/15 70/16 74/8 122/5 136/21
creating [3] 60/22 61/2 82/18 creation [5] 35/12 35/16 43/13 60/10 121/15
creations [1] 115/9
credibility [2] 20/8 21/10
creeper [3] 106/9 106/10 106/16
crime [13] 40/13 60/8 75/20 87/6
134/16 134/24 135/5 135/8 135/10
135/19 135/21 137/4 137/9
criminal [7] 11/12 12/1 17/24
18/15 19/22 21/14 89/13
cross [5] 3/12 69/25 103/9 114/16
134/19
cross-examination [3] 3/12 69/25 114/16
cross-hatched [1] 103/9
culminated [1] 60/24
cumulative [1] 120/3
curl [1] 9/5
currently [1] 6/23
curriculum [2] 34/10 34/22
curtilage [2] 57/5 63/6
cut [2] 23/19 39/1
D
D-a-o [1] 8/23
Daniel [2] 4/24 6/3
Dao [3] 8/22 9/12 9/15
dark [2] 72/23 73/1
darker [3] 67/20 100/13 100/14
Dassey[12] 57/6 68/8 134/18
134/20 134/21 135/9 135/14
$135 / 17$ 135/25 136/25 137/2 137/5
data [7] 43/12 43/15 43/16 43/17
46/16 49/8 120/23
date [2] 1/9 91/4
dated [2] 15/21 140/15
David [1] 5/7
day[11] 1/4 26/9 35/21 36/1 80/2
80/2 87/24 91/16 91/16 91/17
140/15
days [5] $8 / 17$ 36/6 41/17 42/10 42/13
DCI [1] 99/14
$\begin{array}{llllll}\text { deal }[5] & 31 / 1 & 109 / 24 & 110 / 3 & 113 / 10\end{array}$ 122/17
deals [1] 124/18
DEAN [3] 1/18 4/16 30/6
debris [1] 84/20
December [1] 102/23
deceptively [1] 114/1
decide [1] 118/15
decided [2] 30/14 97/7
decision [12] 15/6 19/11 20/18
20/20 21/6 21/11 21/17 25/11
26/23 109/25 110/5 $119 / 11$
decisions [8] 82/8 82/10 82/13
$82 / 1882 / 1982 / 2383 / 183 / 6$
dedicated [1] 13/1
deemed [1] 97/4
deeper [1] 50/3
Deere [1] 84/9
defect [2] 108/1 108/1
defects [4] 106/24 106/25 107/1 107/6
defendant [21] 1/8 1/19 1/21 1/22
10/14 16/4 16/11 16/17 16/22
17/8 18/5 20/20 21/2 21/5 30/9
134/17 134/18 135/4 135/15
135/17 138/5
defendant's [2] 25/12 111/25
defendants [1] 10/18
defense [25] 13/14 13/15 14/17
15/5 16/2 21/8 21/20 22/6 22/13
24/2 30/16 36/21 49/23 89/12
$89 / 1389 / 21115 / 12121 / 14125 / 11$
128/15 129/6 130/15 130/18
133/21 137/15
defense's [1] 125/24
Defere [1] 5/7
degree [4] 43/3 $119 / 15$ 134/15 136/22
degrees [3] 40/24 40/25 43/3
delay[1] 67/4
deliberate [1] 5/18
deliberation [1] 12/11
delivered [1] 102/23
demeanor [1] 20/11
demographics [2] 8/3 12/24
demonstrate [1] 83/11
demonstrated [1] 124/24
demonstrating [1] 83/10
demonstration [4] 107/19 119/17
124/23 125/9
demonstrative [12] $28 / 23$ 30/18
80/21 83/3 90/6 115/24 117/25
118/9 118/19 $118 / 25$ 120/5 122/25
demonstratively [1] 91/9
Dennis [1] 36/16
denote [1] 74/19
denoted [4] 85/5 85/15 85/18 105/12
deny [1] 21/20
denying [1] 25/12
Department [2] 4/10 30/4
depend [1] 128/3
dependent [1] 26/23
depending [1] 24/22
depict [7] 72/15 72/16 80/1 94/14 105/11 105/18131/9
depicted [4] 83/25 86/4 108/18 116/7
depicting [2] 101/16 115/5
depiction [5] 75/1 93/1 113/25
115/4 123/13
depictions [2] 69/16 82/23
depicts [1] 107/20
descent [1] 10/20
describe [10] 9/4 44/1 45/24 48/12
50/20 61/14 74/7 113/6 120/17 121/10
described [4] 37/10 52/25 106/25
107/1
describes [2] 112/15 119/13
describing [2] 44/14 95/3
description [1] 103/12
design [6] 74/13 81/20 87/2 92/20
95/11 95/11
designation [1] 16/1
designed [10] 50/1 $173 / 273 / 3$
73/23 80/4 81/17 82/1 87/8
105/17 105/18
desk [1] 47/13
detail [4] 58/19 59/19 126/22
126/25
details [2] 75/11 75/17
determination [1] 119/14
determine [1] 18/14
determined [2] 49/19 128/10
determining [1] 71/16
developed [1] 114/14
device [6] 32/5 39/22 40/4 41/11
70/4 $114 / 13$
diagram [8] 45/3 45/11 50/8 74/16
89/22 90/1 116/1 127/9
diagrammed [1] 44/21
diagramming [1] 47/13
diagrams [8] 35/16 45/14 45/15
45/19 46/3 46/18 88/19 121/16
Diane [5] 2/1 4/24 6/3 140/4
140/19
dictates [1] 21/8
differ [1] 104/11
difference [4] $25 / 8$ 80/24 100/14
128/7
differences [2] 116/10 117/2
different [23] 9/17 45/23 47/20
47/20 55/21 56/13 57/21 59/14
61/24 69/13 80/18 80/19 91/1
91/2 91/5 91/13 91/18 108/4
116/8 124/2 128/10 135/24 136/5
difficult [6] 20/22 48/20 48/24
90/20 109/17 125/16
difficulty [4] 102/9 106/14 110/14 113/5
digital [6] 37/7 72/17 99/6 99/13
99/15 113/22
digitally [1] 99/4
dimension [2] 94/5 95/8
dimensional [27] 35/16 41/6 41/10 43/14 44/1 44/5 45/14 45/18 46/2 46/6 46/9 47/2 47/4 47/18 48/1 1 48/16 48/18 49/2 56/4 56/9 56/15 74/6 74/15 93/7 95/3 95/6 95/13
dimensions [4] 49/21 57/2 58/12 92/10
dining [1] 86/25
dire [3] 15/20 15/25 27/11
direct [9] 3/11 33/22 43/21 46/21 49/17 49/25 54/14 110/1 114/15
directed [1] 107/8
directing [1] 88/6
direction [7] 53/14 82/5 84/15
88/11 88/14 89/7 132/23
directional [1] 57/11
directionality [1] 79/25
directions [1] 78/19
directly [6] 61/6 70/10 70/15 71/5 71/6 79/5
disagree [2] 22/13 123/10
disagreeing [1] 22/25
disagreement [1] 23/21
disappeared [1] 99/23
disclosed [1] 133/17
discretion [1] 125/8
discrimination [1] 16/12
discuss [3] 6/20 26/25 133/7
discussed [6] 22/18 46/10 56/14
59/9 68/22 93/6
discussing [1] 107/8
discussion [1] 29/12
disk[1] 63/17
dismissal [1] 16/18
displayed [2] 89/19 100/6
dispute [3] 17/2 19/7 129/4
disputed [5] $15 / 9$ 17/1118/7 18/8 127/3
dissent [3] 19/11 19/13 20/4
dissents [1] 19/8
distance [4] 40/4 70/18 77/13 77/23
distances [1] 45/20
distinguish [2] 12/6 12/24
District [3] 4/7 4/11 30/3
divided [3] 43/2 43/3 43/4
DNA [1] 23/6
do [96] 6/12 6/16 6/20 7/5 7/5 7/7
7/9 12/16 14/1 14/2 14/14 14/23
16/6 23/1 23/12 25/2 27/5 27/6
28/3 28/14 28/15 29/1 31/24 34/5
39/12 42/14 44/9 44/10 44/16
44/19 48/3 48/8 51/7 54/10 59/20
63/22 64/24 66/15 70/21 73/2
74/9 76/3 76/8 76/23 76/24 79/19 80/8 81/9 81/12 86/15 88/15
88/19 89/22 91/18 92/5 93/23
96/7 96/8 96/9 96/1 1 96/23 97/9
97/15 98/1 100/10 100/16 100/25
104/2 104/2 104/20 104/24 106/6
109/12 109/24 110/19 111/15
111/19 113/23 113/25 116/6
117/17 117/19 120/4 120/13
122/14 123/16 124/6 126/24 130/7
131/17 134/12 135/18 136/4
137/14 137/20 140/6
document [6] 34/10 34/13 34/21
37/1 40/5 134/5
documented [2] 37/9 87/3
documents [1] 53/19
Dodge [3] 58/2 58/4 65/23
does [15] 14/4 18/8 33/5 47/3
$55 / 25$ 57/3 70/21 76/1 76/1 76/3
117/18 130/11 130/12 136/13 137/15
doesn't [10] 31/751/1164/21
73/15 73/20 75/18 108/5 120/12 128/7 131/8
dog [1] 115/2
doing [7] 62/22 77/10 80/9 91/19
$92 / 7$ 96/21 133/25
Donald [1] 5/7
done[21] 23/6 49/20 51/18 52/4
59/5 65/20 76/16 78/25 91/12
91/12 91/13 91/15 98/23 109/2
109/3 110/2 114/12 118/3 135/23
137/25 138/20
door [6] 77/8 77/21 77/21 99/22
100/19 101/3
doorway [3] 99/23 100/15 100/22
Dorn [2] 5/1 6/4
doubt [1] 135/4
down [15] 33/18 40/24 44/7 45/12
48/19 58/5 66/11 77/22 92/3
97/23 100/4 107/15 117/9 119/2
120/8
download [2] 43/17 76/2
Dr [1] 106/25
Dr.[10] 60/12 60/15 61/13 61/23
93/21 94/17 107/4 107/13 107/25 121/23
Dr. Eisenberg [8] 60/15 61/23
93/21 94/17 107/4 107/13 107/25 121/23
Dr. Eisenberg's [1] 61/13
Dr. Leslie [1] 60/12
draft [7] 63/9 64/9 64/16 102/15
102/16 102/22 133/12
drafting [1] 92/21
dramatic [1] 78/10
draw [6] 46/18 77/2 89/25 119/3
120/23 127/8
drawing [4] 43/18 44/1 77/1 92/23
drawn [1] 5/18
driveway [1] 45/6
drug [2] 11/15 11/18
duck [2] 96/7 96/8
duct [4] $96 / 15$ 96/1 8 96/23 103/13
due [1] $9 / 25$
duly [1] 33/11
duplicated [1] 126/10
duplicity [1] 136/21
duration [2] 27/4 1 19/17
during [15] 15/16 19/10 26/22
26/25 27/17 27/19 28/20 31/24
42/8 42/14 83/25 91/19 105/19
115/21 124/5
duties [1] 36/4
duty [1] 20/7
DVD [7] 37/6 37/10 62/6 65/13
93/2 110/19 110/25
DXF [1] 92/22
dynamic [1] 123/12

## E

each [16] 5/12 14/18 23/6 43/3
43/4 48/25 49/4 65/8 76/7 76/19
76/20 84/12 103/8 108/17 137/10 137/13
earlier[4] 14/16 56/14 66/10
102/15
early [2] 78/23 80/12
earth's [1] 78/21
easel [1] 46/2
easier [3] 44/17 51/9 115/4
easily [3] 114/14 126/21 127/4
east [1] 45/6
easy [5] 110/11 113/15 114/3
114/23 115/1
editing [1] 77/1
editorial [4] 87/20 112/17 114/6 123/20
EDTA [2] 22/3 24/21
education [2] 34/23 35/1
effect [1] 62/24
efforts [1] 35/24
Eisenberg [10] 60/12 60/15 61/23
93/21 94/17 107/1 107/4 107/13
107/25 121/23
Eisenberg's [1] 61/13
either[18] 19/13 21/22 69/2 82/20
83/7 86/20 88/21 89/4 99/19
109/16 109/25 124/9 133/18 134/2
134/2 134/10 135/17135/18
electronic [5] 37/16 39/22 40/3
93/17 109/16
element [6] 21/14 24/11 46/20 135/8 138/2 138/4
elements [3] $134 / 15 \quad 135 / 5 \quad 137 / 1$
elevation [5] 40/24 41/1 46/14
46/19 97/22
else [8] $21 / 22$ 25/9 28/7 37/25
39/2 55/14 135/9 138/11
email [3] 134/6 134/7 138/9
emails [1] 137/13
emphasized [1] 21/14
employed [3] 33/24 33/25 89/11
employment [1] 19/1
end [6] 65/8 68/20 112/5 115/2
115/3118/6
enforcement [6] $11 / 21$ 35/21 42/5
50/18 91/21 92/9
engage [1] 20/5
enlarge [1] 99/10
enough [15] 24/19 25/7 88/3 88/3
90/25 90/25 101/12 114/14 118/5
118/6 125/19 125/21 126/9 127/4 128/8
entire [9] 36/8 42/4 44/20 49/12
49/20 54/1 57/1 66/22 97/23
entirely [3] 13/13 21/7 86/23
entitled [3] 16/12 37/1 90/5
envelopes [1] 53/12
environment [1] 77/14
envision [1] 120/1
equipment [1] 42/21
error [3] 42/25 100/21 $114 / 18$
escort [2] 6/25 7/19
especially [1] 122/18
essentially [16] 34/15 37/9 40/3
40/20 43/7 44/19 45/3 47/6 52/10 57/20 62/15 64/19 68/20 70/11 76/25 109/12
establish [1] 51/24
established [2] 13/6 125/7
etcetera [1] 77/2
ethnic [1] 13/9
ethnicity [1] 9/1
European [2] 8/21 9/7
even [14] 10/22 13/12 20/20 29/10 41/9 50/19 75/18 85/17 106/21
113/11 115/16 120/3 125/6 136/10
even get [1] 115/16
evening [2] 11/22 124/6
event [2] 94/4 125/2
eventually [2] 76/2 78/9
ever [7] 11/11 17/23 55/17 75/9
89/12 89/13 121/15
every [6] 62/17 64/11 76/12 88/23
116/22 131/2
everything [10] $44 / 1875 / 583 / 24$
85/19 88/20 89/5 94/9 94/10
113/17114/6
evidence [31] 5/16 19/17 19/18
19/19 23/3 28/18 28/23 30/18
45/17 45/25 50/19 50/21 56/17
evidence... [18] 58/8 58/21 65/2
65/3 69/4 97/17118/19118/25
122/7 122/25 125/21 126/14
128/12 129/3 129/14 130/1 130/3 132/15
evidentiary [6] 29/3 50/4 59/12
65/25 89/4 105/15
evolved [1] 46/1
exact [2] 17/21 77/18
exactly [8] 13/24 65/11 69/7 96/17
106/5 108/1 $112 / 3$ 130/4
examination [7] 3/11 3/12 24/1
33/22 69/25 105/19 114/16
examined [3] 8/12 14/11 33/12
example [16] 47/25 59/2 59/21
59/22 71/23 75/24 76/4 85/8 86/5 92/5 101/5 108/23 110/7 123/15 125/20 126/5
exasperated [1] 116/14
except [1] 18/9
excess [1] 119/7
exchange [2] 92/23 138/9
exclude [4] 30/9 124/10 124/12 125/18
excuse [10] 26/9 26/17 27/21 56/7
57/4 62/2 74/1 98/7 105/17
121/11
excused [5] 7/4 7/13 15/3 26/4
111/12
excusing [1] 6/13
executed [1] 35/22
executing [1] 91/21
exercise [3] 15/6 17/5 18/24
exercised [2] 10/16 16/24
exercising [2] 5/11 5/20
exhibit [34] 34/19 37/4 37/6 37/16
$51 / 25$ 53/5 53/7 54/3 54/15 54/16
54/18 54/24 62/4 62/4 63/13
63/14 63/17 63/22 63/24 64/4
65/17 110/23 118/9 120/11 122/21
126/15 126/23 127/20 129/25
130/3 130/4 130/16 131/7 131/10
Exhibit 3 [1] 63/17
Exhibit 4 [1] 122/21
exhibits [17] 38/1 38/4 50/11
63/21 82/19 86/12 90/6 90/11
120/6 120/9 120/14 121/17 128/2
128/17 128/19 129/5 131/6
exist [1] 102/21
existing [1] 125/1
expect [3] 60/20 112/25 122/16
expectation [1] 115/11
experience [2] 34/16 35/2
experienced [1] 26/3
experiment [1] 126/11
expert [3] 24/5 60/9 95/16
expertise [6] 60/7 61/1 61/5 61/13
107/12 108/15
experts [1] 50/19
explain [9] 43/2 44/17 46/24 50/20
50/24 60/18 61/6 97/9 131/15
explained [4] 5/10 126/12 126/21
131/14
explaining [3] 50/12 65/1 88/11
explanation [1] 124/20
explanations [1] 17/13
explosion [1] 123/14
exposed [1] 27/18
exposure [3] 26/19 27/15 28/2
expressed [1] 126/5
extent [4] 20/25 24/14 31/3 125/17
exterior [4] 51/8 96/4 121/6 121/20
exteriors [2] 51/9 56/21
extra [1] 25/21
eye [6] 9/2 56/3 59/15 75/12 78/1 113/16
eyes [1] 8/20
F
fabric [1] 24/23
facie [3] 8/11 9/10 16/23
fact [36] 11/4 11/18 12/18 13/20
15/9 16/14 18/19 18/22 31/7 36/3
42/24 45/16 48/17 53/4 55/17
56/1 60/20 62/16 64/25 73/23
83/20 84/8 85/10 85/21 87/3
100/24 103/15 $115 / 5116 / 15$
117/18 119/25 121/8 126/16 130/8 130/9 133/24
factor [1] 41/12
factors [3] 118/24 119/19 126/10
facts [1] 119/18
factual [2] 13/15 15/14
fade [2] 66/15 67/7
fading [1] 68/23
failure [2] 123/14 126/11
fair [8] 45/25 88/3 88/3 90/25
90/25 101/14 117/24 123/5
fairly [4] 19/19 87/1 87/11 126/20
fairness [4] 24/11 24/18 119/20
121/9
faith [2] 19/25 82/8
fall [2] 15/11 82/6
FALLON [8] 1/14 4/9 10/7 14/6
18/5 28/5 30/4 32/21
familiar [1] 109/1
family [4] $11 / 10$ 17/23 18/4 27/2
far [6] 77/8 113/2 117/18 120/8
121/21 122/19
fashion [2] 24/12 38/7
Fassbender [1] 82/21
fast [1] 111/6
father [6] 11/17 13/20 13/22 18/16
18/21 21/15
faux[1] 83/16
FBI [11] 22/8 22/17 23/8 23/8 24/20 25/3 61/18 92/16 92/20 92/25 93/21
FBI's [1] 93/2
feasible [2] 24/14 25/4
FEBRUARY[2] 1/9 63/3
feel [8] $8 / 625 / 741 / 2144 / 13$ 74/5 102/13 107/7 126/6
feet [6] 43/8 94/2 94/11 94/12 97/23 97/25
fell [2] 18/3 18/4
felon [2] 137/17 138/2
felony [2] 137/17 138/6
felt [3] 64/12 64/16 102/11
female [5] 61/11 61/20 93/10 93/18 93/22
few [3] 31/9 46/10 114/15
field [3] 34/16 35/7 113/18
Fifteen [1] 111/21
fight [1] 82/16
figure [49] 39/9 39/15 43/24 44/4 44/16 44/22 45/1 46/23 46/25 48/5 48/6 51/13 51/15 52/13 54/19 54/23 56/23 56/25 57/19 59/1 59/4 59/13 59/14 59/22 59/24 61/10 72/1 72/6 78/6 78/9 78/9 84/4 85/7 86/6 86/17 86/22 96/3 96/17 97/1 99/17 101/11

103/17 103/21 105/2 105/3 106/23
108/22 136/18 136/19
Figure 18 [1] 97/1
Figure 31 [1] 86/22
figures [6] 36/22 37/20 53/17
54/14 103/9 109/9
file [6] 92/22 92/23 93/7 93/10
93/17 93/20
filed [1] 30/8
filing [1] 55/12
final [5] 6/12 8/25 9/6 63/18 93/8
finally [2] 69/13 122/1
find [13] 10/9 20/10 23/9 23/18
39/9 55/14 134/17 134/21 134/22 135/3 135/10 135/14 135/15
finding [1] 125/9
findings [1] 60/19
fine [5] 72/10 92/15 94/23 138/8 139/11
finish [2] 57/14 91/18
finished [2] 42/1 67/3
first [27] 8/22 10/13 10/13 11/13
13/14 16/3 16/22 17/15 27/7 30/8 $33 / 1135 / 1843 / 1343 / 1451 / 6$ 51/9 51/14 58/1 63/8 64/6 90/4 95/22 112/2 112/14 134/14 135/8 136/22
fit [1] 117/8
five [4] 23/3 23/6 23/8 32/9
fixed [3] 56/17 65/3 122/7
flank [1] 84/12
flat [3] 95/5 95/6 95/7
Flint [2] 5/3 6/6
flip [2] 62/20 88/22
floor [2] 85/25 102/13
flower [1] 113/19
fluid [1] 64/14
flyer [1] 72/23
fob [1] 102/16
focal [1] 99/1
focus [3] 23/22 113/18 134/20
focusing [1] 21/17
foggiest [1] 72/4
folks [1] 25/3
follow [4] 7/12 8/9 31/7 86/10
followed [1] 129/25
following [5] 8/10 86/11 91/17 105/6 105/16
follows [3] 33/12 130/16 131/10
foot [2] 41/15 128/6
footnote [1] 16/9
foramen [3] 107/2 108/14 108/19
foregoing [2] 140/7 140/7
foremost [1] 10/13
forensic [11] 35/7 35/14 37/2
46/17 55/5 58/15 68/5 76/3 79/2
90/16 105/10
forensically [2] 36/7 97/12
forget [4] 37/25 66/9 $113 / 15114 / 4$
Forgive [1] 66/9
form [2] 54/2 135/12
formal [1] 112/19
format [2] 92/21 110/25
formulas [1] 118/20
forth [1] $14 / 10$
forthrightly [1] 101/6
forward [2] 39/6 111/6
found [17] 9/12 9/18 24/3 50/19
50/21 51/15 58/12 65/2 67/23
69/4 103/1 103/13 105/15 127/9 127/23 129/13 130/3
foundation [10] 51/25 112/24
125/7 125/19 125/25 127/5 127/19

| F | 111/12 118/15 125/16 128/19 | $24$ |
| :---: | :---: | :---: |
| foundation... [3] 127/23 129/15 | given [21] 8/2 12/19 15/23 19/22 | hard [3] 12/5 53/16 86/12 |
| 131/1 | 20/9 20/13 20/15 22/17 28/10 | Haskell [1] 4/25 |
| foundational [1] 114/15 | 63/13 63/20 101/22 103/4 109/7 | hatched [1] 103/9 |
| foundations [1] 133/4 | 110/19 116/20 133/11 133/18 | haven't [8] 47/6 47/7 67/9 84/22 |
| four [12] 8/17 23/15 32/9 71/24 | 133/20 133/24 134/5 | 89/20 89/23 116/20 132/14 |
| 76/15 76/19 76/21 77/9 77/20 | gives [9] $42 / 25$ 46/13 64/14 100/9 | having [6] 13/22 33/11 52/21 |
| 111/22 135/18 135/23 | 101/1 113/25 117/14 118/8 133/15 | 72/22 87/13 102/9 |
| Fourteenth [1] 9/25 | giving [2] 26/1 79/25 | head [3] 107/5 107/9 107/21 |
| fourth [1] 135/21 | global [2] 31/14 70/6 | header [1] 68/19 |
| fraction [1] 77/22 | goes [3] 17/7 34/22 125/6 | heading [2] 112/11 112/13 |
| fragment [1] 107/18 | going [59] 10/24 14/12 15/14 24/5 | hear [9] 5/15 6/1 26/5 30/8 32/3 |
| fragments [2] 67/23 129/13 | 24/20 25/18 25/24 26/8 27/3 | 111/17111/25 127/25 134/13 |
| frame [2] 42/8 91/7 | 27/21 28/17 36/11 36/20 38/1 | heard [3] 31/20 89/20 119/22 |
| frames [2] 64/10 64/13 | 40/23 41/13 43/21 44/11 46/4 | hearing [18] 1/5 1/5 3/5 3/7 28/13 |
| frankly [2] 12/15 24/8 | 46/21 50/3 51/12 53/4 56/22 | 28/22 29/9 29/25 30/1731/25 |
| free [5] 4/24 6/3 41/22 44/13 | 57/17 58/1 58/19 59/21 61/12 | 34/24 38/20 64/3 69/21 90/4 |
| 121/10 | 62/21 65/6 65/10 65/13 65/22 | 111/9 118/14121/4 |
| freezer [1] 55/12 | 65/25 67/7 67/25 68/1 68/15 | hearings [1] 118/21 |
| Friday [1] 67/2 | 68/24 77/2 77/3 78/8 81/11 81/12 | height [7] 46/14 46/19 70/15 |
| front [7] 17/19 25/7 25/21 33/2 | 85/4 89/3 89/6 91/5 99/24 100/4 | 71/14 93/23 94/5 94/10 |
| 66/1 68/14 106/18 | 111/4 125/15 125/23 126/24 | held [1] 9/14 |
| full [2] 9/22 123/3 | 128/18 130/25 135/7 138/25 | help [13] 44/17 45/16 45/19 45/24 |
| furniture [5] 87/5 87/12 87/16 | gone [2] 76/18 105/14 | 45/25 60/18 65/6 81/5 84/5 94/17 |
| 132/9 132/10 | good [16] 4/5 4/14 19/25 30/5 | 116/6 126/25 128/21 |
| further [6] 15/14 59/7 59/25 110/8 | 31/23 39/3 76/4 77/10 82/8 98/3 | helpful [7] 52/17 54/14 123/7 |
| 126/8 129/19 | 112/12 113/7 114/1 116/17118/8 | 123/25 124/7 124/13 132/11 |
| G | 124/4 | helps [2] 46/23 51/3 |
| G-e-o-d-i-m | graffiti [3] 7 | [1] 103/5 |
| GAHN [6] 1/16 4/11 22/1 22/9 | granted [1] 134/25 | Henry [2] 5/5 6/6 |
| 22/23 25/3 | gravel [5] 45/6 64/17 64/19 64/21 | here's [3] 45/9 115/25 119/10 |
| GAHN-Present [1] 1/16 | 82/7 | hereby [1] 140/6 |
| gain [1] 56/11 | gray [3] 5/5 6/6 82/12 | herein [1] 33/11 |
| gained [1] 46/8 | grayish [1] 85/15 | heritage [2] 8/18 9/4 |
| garage [61] 47/5 47/16 47/17 48/4 | great [5] 11/22 86/17 92/14 | hid [1] 54/20 |
| 48/9 54/11 54/19 54/22 55/2 55/3 | 109/24 113/9 | hidden [2] 51/19 52/5 |
| 55/4 55/14 56/7 57/9 57/16 57/23 | greater [1] 59/18 | high [1] 70/13 |
| 59/10 59/12 67/6 67/8 67/13 | greatest [1] 116/5 | highest [1] 8/11 |
| 67/15 67/19 75/13 75/15 79/4 | grounds [1] 21/18 | highlight [1] 104/9 |
| 82/3 84/6 84/21 85/10 85/25 86/3 | group [2] 10/16 13/9 | highlighted [1] 104/24 |
| 106/3 110/6 110/6 116/7 116/7 | Guckeisen [1] 5/8 | highlighting [3] 103/24 123/19 |
| 116/9 116/12 116/13 116/17117/1 | guess [7] 29/3 31/6 75/22 89/23 | $124 / 13$ |
| 117/7 117/8 117/9 117/21 117/25 | 99/1 107/7 107/14 | highlights [2] 112/12 117/16 |
| 122/18 124/3 124/5 125/13 125/20 | guessed [1] 29/8 | himself [5] 11/14 12/25 16/6 16/15 |
| 125/22 127/17 129/8 129/11 | guessing [3] 29/7 47/19 47/23 | $18 / 3$ |
| 129/24 130/5 130/9 131/8 131/10 | guidance [6] 50/6 125/15 125/16 | history [2] 12/1 12/8 |
| gave [7] 13/2 63/17 64/9 93/5 | 128/14 128/19 129/20 | hold [4] 13/3 35/6 37/13 71/5 |
| 93/14 109/11 109/15 | guided [1] 88/5 | holding [2] 71/9 76/17 |
| gee [1] 73/6 | guilty [2] 134/17 134/22 | hole [8] 73/4 73/14 73/15 73/20 |
| general [5] 4/10 48/2 81/1 91/11 | gun [1] 138/3 | $73 / 2075 / 12 \quad 114 / 23114 / 25$ |
| 132/23 | guns [1] 101/8 | holes [7] 72/13 72/15 72/24 73/6 |
| $\underset{74 / 14}{\text { generally [4] } 30 / 1330 / 1874 / 12}$ | H | $114 / 21126 / 7126 / 17$ |
| generate [2] 69/9 79/8 | H-u-a-n-g [1] 8/22 | homicide [2] 134/15 136/23 |
| generated [16] 29/8 30/10 30/19 | had [29] 11/14 12/9 18/23 22/10 | Hon [1] 1/10 |
| 31/2 55/16 55/24 68/21 69/7 | 41/14 42/5 53/1 59/6 60/16 68/10 | honestly [1] 96/20 |
| 69/15 77/5 93/3 93/16 107/12 | 87/1 89/23 90/22 97/11 98/13 | honor [12] 4/5 4/15 7/2 8/1 10/6 |
| 113/10 129/5 132/20 | 99/1 102/8 102/16 102/23 105/14 | 27/24 86/9 98/12 108/2 122/11 |
| generates [1] 80/14 | 106/13 106/15 110/14 129/11 | 137/10 138/16 |
| generic [1] 102/24 | 129/23 133/21 137/16 138/5 | hopefully [2] 23/10 138/20 |
| gentleman [2] 18/9 83/14 | 140/13 | horizontally [1] 70/19 |
| Geodimeter [1] 39/24 | hairdo [1] 9/5 | hour [3] 29/10 63/17 133/24 |
| geometric [5] 48/22 51/1 68/15 | Halbach [1] 58/9 | house [6] 31/23 32/2 43/22 56/10 |
| 81/21 119/9 | half [7] 22/14 23/19 24/20 29/10 | 68/3 132/2 |
| geometry [7] 65/11 70/13 75/5 | 43/9 76/12 78/12 | however [7] 20/6 48/7 48/8 53/1 |
| 75/7 114/7 114/8 114/19 | hallway [1] 100/18 | 61/1 106/17107/17 |
| gets [2] 7/15 14/6 | hand [2] 22/19 33/9 | Huang [3] 8/22 9/12 9/13 |
| getting [1] 89/7 | handed [3] 22/20 34/18 37/3 | human [6] 8/15 56/3 59/15 75/1 |
| give [22] $44 / 11$ 59/21 65/5 71/4 | handwritten [1] 15/18 | 78/1 114/18 |
| 72/1 72/20 77/3 78/3 81/17 81/20 | happen [2] 26/1 110/2 | humanly [1] 117/15 |
| 81/24 82/1 94/4 94/5 96/17 | happened [3] 89/16 90/3 92/12 |  |

96/6 96/24 104/25 127/18 130/2
130/2 130/4 136/6
identical [1] 100/8
identification [1] 34/19
identified [7] $5 / 1114 / 18$ 18/10 38/7 39/17 59/11 65/24
identify [5] 39/10 66/1 68/2 68/10 77/4
identifying [3] 52/23 53/2 67/17
illusion [5] 81/18 95/8 95/12 100/9 101/2
illustration [2] 108/9 116/2
image [33] 36/12 38/6 39/8 43/25
47/2 48/7 48/18 52/14 52/25
55/16 57/18 58/3 62/23 62/23
62/24 67/6 72/25 79/3 82/2 88/9
91/10 92/14 93/3 93/4 105/18
115/18 117/13 123/5 123/8 126/1 126/2 129/10 132/5
images [67] 30/15 30/19 31/5
$31 / 1633 / 535 / 335 / 1236 / 536 / 20$
36/23 37/1 43/13 43/14 46/6
47/21 48/16 49/25 50/17 50/20
52/19 53/4 53/6 53/8 53/16 53/19
$54 / 255 / 2557 / 1860 / 1060 / 13$
60/1 8 62/3 62/8 62/16 64/11
64/24 66/20 66/21 66/23 67/9
68/22 68/22 69/9 69/15 69/16
74/8 91/11 95/6 106/22 112/13
119/7 119/24 121/6 121/12 121/20
121/21 122/2 122/3 122/13 122/20
122/21 127/13 131/18 131/24 132/1 133/3 133/5
imagination [2] 72/25 73/8
Imaging [1] 92/18
immediate [1] 91/24
immediately [3] 129/25 130/16 131/10
impact [1] 119/20
importance [1] 27/9
important [9] 24/1 24/12 50/7 50/7
56/5 56/18 67/22 69/4 126/9
impossible [1] 89/5
impress [1] 12/7
impression [6] 12/13 22/9 65/5
72/21 73/12 73/16
improper [1] 21/3
improve [1] 46/4
improvements [2] 63/10 64/6 in [464]
in-house [1] 43/22
inadvertently [2] 27/16 27/18
inch [3] 43/10 76/12 77/22
inches [2] 106/5 106/5
include [11] $26 / 3$ 28/1 57/3 57/24
58/11 60/5 83/7 83/15 83/20
96/14 125/8
included [10] $37 / 17$ 62/3 82/24
85/3 87/19 88/8 89/14 89/14 114/1 134/3
includes [2] 33/7 120/21
including [4] 27/1 49/8 54/9 67/22
indeed [6] 9/14 30/25 59/4 77/17
124/13 130/25
$\begin{array}{lllll}\text { indicate [5] } & 10 / 23 & 12 / 2 & 18 / 2 & 33 / 4\end{array}$ 34/25
indicated [5] 11/19 11/20 16/25
18/13 124/22
indicates [3] 18/5 20/6 38/11
indicating [1] 129/22
individually [1] 42/10
induced [1] 42/25
individual [1] 42/15
industries [1] 74/13
industry [1] 74/11
information [11] 12/13 25/7 27/19
28/4 37/17 43/20 46/15 58/7
88/22 105/22 130/13
informed [2] 26/21 137/23
informs [1] 131/12
initial [6] $12 / 20$ 13/18 $14 / 315 / 18$
15/19 18/18
injury [1] 113/9
inside [6] 52/6 54/21 55/2 55/3
67/8 100/19
instance [1] 87/21
instead [2] 63/1 122/4
instilled [1] 74/17
instruction [6] 6/13 118/9 124/11
133/19 135/3 135/12
instructions [15] 26/2 26/11 27/22
29/12 29/17 133/10 133/10 133/12
133/15 133/19 133/22 134/3 134/4
134/8 137/10
instructor [1] 35/6
instrument [8] 40/17 40/20 40/22
40/25 42/25 70/11 70/16 90/21
intend [2] 80/1 120/12
intended [3] 116/2 $130 / 7130 / 9$
intends [1] 128/23
intent [1] 81/7
intention [6] 80/8 94/16 98/2
105/11 137/24 138/1
intentional [3] 67/4 134/15 136/22
intentionally [2] 89/3 135/6
interested [4] 74/6 77/7 78/8 107/14
interior [9] 54/10 56/7 57/8 58/22
66/16 87/1 121/6 121/20 129/11
interiors [2] 51/6 51/12
internally [1] 43/16
internet [3] 27/25 28/1 28/3
intersection [1] 119/3
into [22] $12 / 17 \begin{array}{llllll} & 15 / 11 & 18 / 3 & 18 / 4\end{array}$ 20/18 36/23 43/2 43/3 43/4 43/18 46/16 49/1 50/3 58/19 62/22 65/4 82/15 100/22 109/19 124/1 127/1 136/19
introduced [1] 53/20
introduces [1] 115/21
investigative [1] 35/4
investigators [4] 49/18 50/18 83/9 105/12
invite [1] 65/14
involved [9] $35 / 1841 / 17$ 42/9 64/8 99/2 104/18 113/8 121/2 123/11 issue [13] 12/22 16/3 19/2 21/9 24/24 30/12 30/14 32/21 111/14 112/18 120/10 124/3 133/9
issues [3] $9 / 21112 / 8 \quad 122 / 17$
issuing [1] 24/6
item [8] 71/2 71/6 71/8 71/10 71/16 75/23 78/24 81/9
items [51] 45/21 51/4 51/5 55/1
55/13 57/24 57/25 57/25 59/11 59/13 59/18 60/4 65/7 67/15 67/22 69/16 82/24 84/16 85/11 85/16 85/1 $886 / 387 / 487 / 10$ 87/22 88/1 88/7 89/18 90/15 90/18 92/8 92/11 97/2 97/8 97/10 97/14 97/15 97/19 98/10 99/14 103/15 105/12 105/15 105/18 105/20 105/25 106/12 $115 / 19$

118/16 131/21 132/19
itself [11] 36/3 40/20 50/16 51/8 70/4 93/3 93/15 93/25 95/11 118/25 123/23
J
Jacqualine [1] 4/25
Janda [7] 57/6 57/14 60/3 63/5
68/1 68/8 $115 / 14$
Janda's [2] 71/25 77/8
Janda/Dassey [1] 68/8
Janet [2] 25/15 63/22
January [1] 15/22
January 26 [1] 15/22
jargon [1] 69/14
jaw [5] 107/23 108/5 108/17
108/18 108/20
JEROME [2] $1 / 204 / 15$
jewelry [1] 74/12
Jim [1] 97/14
job [1] 76/4
John [11] $5 / 3$ 11/15 11/24 11/25 13/19 15/24 15/25 18/15 18/16 19/21 84/9
joined [1] 137/8
joining [1] 136/22
joint [1] 8/14
Jr [6] $11 / 25$ 14/1 $15 / 2416 / 118 / 11$ 18/20
Jr.'s [1] 18/16
judge [37] 1/11 21/24 24/4 24/15
28/22 29/4 30/12 31/13 31/20
$32 / 1837 / 2538 / 838 / 1238 / 18$
38/25 53/25 55/22 63/19 65/17
69/22 107/22 111/10 111/14
118/12 119/10 120/7 120/17
120/22 121/4 122/1 129/10 129/18
130/8 131/17 131/22 138/14 139/1 1
judges [1] 45/17
judgment [3] 87/20 87/25 114/6
Julie [2] 5/1 6/4
July [1] 34/3
junior [1] 12/20
junk [1] 85/22
juries [1] 45/17
juror [23] 8/12 9/13 12/23 13/1
13/10 13/21 15/7 17/16 17/17
18/2 $18 / 2$ 18/6 $18 / 10$ 19/20 19/23
20/2 20/9 20/12 20/23 20/25
114/4 117/14 126/19
juror's [1] 11/17
jurors [27] 5/10 5/15 5/17 5/18
6/23 7/6 7/13 7/15 7/17 7/22 7/24 8/3 8/14 9/6 14/17 15/3 15/3 21/23 25/10 25/12 25/16 25/17 25/25 26/4 27/2 27/11 114/16 jury [70] 1/4 4/19 4/20 4/22 4/22 5/9 5/14 6/1 6/9 6/10 7/1 7/11 7/13 7/18 7/19 7/22 7/24 8/2 13/15 14/18 15/4 16/12 21/4 22/21 25/22 25/24 26/10 26/21 27/20 28/6 29/12 29/17 48/17 50/12 50/16 52/1855/1763/1 65/1 65/6 69/1 $115 / 24116 / 11$ 117/1 117/23 118/15 118/22 121/17 122/4 122/6 123/7 123/25 124/1 124/7 124/8 126/6 126/13 127/1 127/14 130/1 131/12 132/12 133/11 134/17 134/21 137/16 137/21 138/4 139/2 139/3
jury's [1] 135/2
Justice [3] 4/10 19/9 30/4

| J | 9/24 10/25 11/2 11/13 1/16 | $8$ |
| :---: | :---: | :---: |
| iustification [1] 17/11 |  |  |
|  |  |  |
| K |  | 64/7 66/25 69/8 79/19 118/8 |
| Keehan [1] 5/5 | lawyers [2] 83/8 101/13 | longer [1] 29/8 |
| keep [1] 9/13 | lay [3] 41/9 52/8 127/5 | longest [1] 43/8 |
| keeping [1] 32/22 | layer [2] 51/20 54/21 | looked [15] 48/25 49/3 57/7 57/9 |
| Ken [2] 4/7 30/3 | lays [1] 13/13 | 64/12 79/16 86/24 105/3 105/4 |
| KENNETH [1] 1/12 | lead [3] 4/7 49/18 83/9 | 116/22 124/2 124/2 129/23 130/5 |
| Kentucky [1] 8/8 | leader [3] 52/22 53/2 61/7 | 132/11 |
| Kevin [1] 5/3 | leading [1] 35/15 | looking [32] 36/13 36/14 38/6 |
| key[13] 101/19 101/23 101/24 | leaf [1] 75/16 | 43/25 44/7 45/11 45/12 48/19 |
| 102/6 102/12 102/16 102/16 | leafless [2] 80/11 80/24 | 51/14 51/16 51/25 52/24 54/18 |
| 102/24 102/25 102/25 103/3 103/5 | leafy [2] 78/11 79/13 | 56/23 59/3 59/8 59/23 60/1 60/3 |
| 127/9 | leash [2] 115/2 115/3 | 66/20 67/15 73/5 85/7 86/12 95/5 |
| Kickland [1] 5/7 | least [26] 8/18 8/20 9/3 15/2 16/2 | 97/23 100/19 101/15 103/15 106/2 |
| kind [13] 11/21 23/16 34/13 62/22 | 19/8 31/21 31/21 31/25 32/1 | 114/5 126/18 |
| 64/8 71/20 81/4 93/4 102/3 111/3 | 34/24 37/19 45/2 69/17 75/8 | looks[14] 9/2 64/18 73/14 73/19 |
| 113/23 114/22 123/21 | 83/21 86/25 91/22 99/7 104/14 | 78/10 78/14 82/2 82/11 84/8 96/6 |
| kinds [3] 82/17 86/1 119/7 | 108/10 113/7 116/15 132/12 | 97/22 99/22 114/24 126/16 |
| Klein [2] 5/2 6/5 | 133/21 139/9 | lose [1] 115/5 |
| knee [2] 94/19 94/20 | leave [5] 62/9 82/4 122/13 129/16 | lot [9] 5/18 41/16 73/6 84/19 |
| knob [1] 77/21 | 135/24 | 85/11 88/19 90/18 92/3 115/23 |
| knowing [5] 13/22 77/7 83/13 92/8 | led [1] 28/17 | Lots [1] 12/17 |
| 115/8 | left [11] 14/20 57/15 58/5 67/20 | Lou [1] 5/6 |
| knowledge [2] 34/13 140/14 | 75/16 101/19 107/9 107/20 108/10 | lovely [2] 78/11 79/19 |
| known [7] 5/12 34/10 35/12 56/18 | 118/18135/16 | lower [1] 58/5 |
| 57/3 67/21 122/7 | legal [3] 10/11 12/21 13/15 | M |
| knows [1] 71/11 | legitimate [1] 19/4 | M |
| KRATZ [28] 1/12 3/11 4/7 30/3 | lengthy [2] 60/16 110/16 | M-PEG [1] 110/25 |
| 30/25 31/4 32/20 40/22 56/25 | lens [2] 98/23 99/1 | machine [1] 140/10 |
| 65/4 65/20 67/7 67/12 71/20 72/5 | Leslie [1] 60/12 | made [22] 5/23 13/21 15/5 21/10 |
| 79/1 82/20 83/7 88/16 89/17 | less [2] 43/9 $115 / 23$ | 21/11 36/23 39/23 53/18 63/10 |
| 104/5 107/11 109/15 110/1 112/8 | let's [10] $25 / 2$ 43/13 46/5 51/6 | 63/12 66/10 66/18 82/13 82/18 |
| 118/11 123/4 128/22 | 51/12 51/13 56/21 62/9 62/10 | 82/20 83/1 83/7 83/15 83/15 |
| Kratz's [2] 78/5 84/5 | 88/5 | 94/11 94/12 100/13 |
| L | level [1] 120/7 | Madison [1] 60/16 |
|  | Is [2] 24/21 31/24 | magic [1] 109/20 |
| label [5] $53 / 1082 / 15$ 93/13 93 | liberty [1] 81/10 | Mahler [2] 5/4 6/6 |
| 108/24 | lie [1] 117/22 | maintain [1] 6/18 |
| labeled [5] 53/17 54/17 96/11 | lied [2] 11/2 12/23 | majority [2] 19/11 19/13 |
| 99/18 109/10 | lieu [2] 63/1 122/3 | make [17] 8/6 8/10 16/23 24/25 |
| labeling [7] 115/11115/13 123/20 | life [1] 116/9 | 26/18 31/17 64/7 65/5 81/5 81/13 |
| 124/11 127/3 127/5 131/21 | light [3] 9/4 64/19 102/11 | 82/4 82/8 104/11 110/2 117/4 |
| labels [10] 52/15 52/21 67/17 | light-skinned [1] 9/4 | 128/7 132/12 |
| 109/8 109/8 109/22 110/4 112/14 | Likewise [2] 85/25 97/1 | making [1] 88/3 |
| 112/17 128/3 | limitations [1] 77/6 | mallet[3] 97/2 115/19 128/5 |
| lack[5] 19/1 34/12 84/20 93/5 | limits [1] 132/13 | man [3] 9/5 12/4 71/1 |
| 101/2 | Linda [1] 25/17 | mandible [3] 107/18 107/23 |
| laid [4] 81/24 117/9 125/25 133/4 | line [4] 24/1 40/9 77/19 77/23 | 108/11 |
| Lamon [4] 14/10 16/9 19/7 19/14 | list [3] 15/17 15/20 15/25 | MANITOWOC[7] 1/1 1/5 1/16 1/20 |
| landscape [1] 36/18 | listed [1] 15/19 | 3/3 6/11 140/2 |
| language [1] 126/8 | listen [2] 26/24 27/6 | manner [1] 69/7 |
| laptop [5] 32/22 33/5 33/7 110/22 | listing [1] 14/1 | manual [1] 114/12 |
| 111/3 | little [14] 20/21 29/7 32/1 38/12 | manually [4] 90/18 90/19 90/23 |
| large [2] 87/11 91/25 | 39/5 60/6 62/10 66/18 69/13 70/3 | 91/13 |
| larger [2] 23/18 55/13 | 102/19 104/2 112/21 128/21 | many [11] 36/25 41/17 42/10 |
| laser [5] 44/9 54/25 70/21 70/23 | live [2] 28/24 118/7 | 42/15 47/11 50/10 66/20 98/13 |
| 99/24 | living [1] 86/25 | 120/5 120/9 126/23 |
| last[19] 5/10 8/16 8/22 11/22 | local [2] 27/5 27/6 | map [3] 71/10 76/7 105/25 |
| 12/17 33/14 59/17 59/21 63/9 | locate [1] 55/13 | mapped [10] 36/8 44/21 45/11 |
| 64/9 66/3 66/19 67/2 67/3 67/16 | located [4] 51/4 58/16 65/8 108/20 | 68/6 90/16 97/12 97/16 104/21 |
| 69/10 74/22 91/4 110/18 | locates [2] 40/20 70/4 | 105/21 106/15 |
| late [2] 12/17 35/25 | location [26] 55/5 56/18 68/6 | mapping [14] 35/7 35/15 37/2 |
| later [4] 79/11 115/9 115/9 124/19 | 68/15 76/7 85/6 85/19 91/18 | 42/1 42/2 48/9 55/5 58/15 62/9 |
| Laura [2] 5/6 6/7 | 92/11 97/12 98/8 101/7 101/23 | 68/5 91/11 91/20 92/10 105/10 |
| law [12] $1 / 181 / 2011 / 2016 / 721 / 8$ | 102/6 104/13 104/14 104/19 | March [5] 105/3 105/12 105/23 |
| 35/21 36/7 42/4 50/18 91/20 92/9 | 104/21 106/16 107/10 127/11 | 130/1 1 130/22 |
| 124/20 | 128/5 128/8 128/9 128/9 130/1 | March 1st [1] 130/11 |
| lawn [2] 84/9 106/18 | locations [6] 61/3 61/24 94/18 | Marian [2] 5/3 6/5 |
| Lawrence [24] 5/3 8/6 8/19 8/25 | 103/10 $115 / 20128 / 3$ | marine [1] 74/12 |

mark [1] 104/4
marked [2] 34/18 37/4 marks [9] 104/15 104/18 104/23
117/10 117/10 117/12 127/16
127/21 128/1
Mary [1] 5/6
mass [1] 116/21
match [2] 18/17 18/19
material [6] 99/24 100/2 100/3
116/11117/3117/3
materiality [1] 122/17
materially [2] 116/8 123/6
materials [5] 28/12 28/19 33/3 33/6 39/10
mathematical [1] 95/9
mathematically [1] 71/13
matter [11] 6/10 8/11 9/17 9/25
12/3 29/24 51/11 138/17 138/22 140/7 140/13
matters [2] 29/1 29/3
maximum [1] 42/24
maybe [8] 23/16 38/5 40/24 63/17
72/24 72/24 139/2 139/6
McConnell [2] 36/16 98/25
mean [17] 11/4 23/20 31/6 47/3
47/13 73/14 73/15 73/20 74/19
82/15 82/16 100/16 105/17 114/2
130/22 137/2 137/4
meaning [4] 44/6 64/11 94/11 110/25
means [4] 92/23 119/18 127/13 130/18
meant [3] 14/15 33/6 88/25
measure [4] 41/4 77/13 90/23 102/10
measured [6] 36/8 84/19 84/25
85/2 85/4 87/4
measurement [4] 40/22 41/6 100/21 119/4
measurements [26] 35/9 36/4
37/19 39/19 39/21 40/12 40/15
40/18 41/18 42/9 42/15 42/17
43/11 46/7 49/8 58/13 67/11
78/16 90/19 91/1 91/3 102/10
103/4 114/12 $115 / 10119 / 8$
measurer [1] 41/10
measures [3] 40/4 40/6 46/12
measuring [6] 41/10 70/23 71/3
71/8 71/12 71/15
medal [1] 24/23
media [4] 26/19 32/22 32/24 33/2
meeting [1] 60/17
Melvin [1] 5/5
$\begin{array}{lllll}\text { member [8] } & 10 / 15 & 13 / 4 & 13 / 8 & 16 / 5\end{array}$
16/16 17/4 18/4 31/21
members [12] 4/20 4/22 4/23 5/9
5/14 10/17 11/10 11/10 17/23
25/23 27/1 65/7
memory [3] 13/11 14/5 108/12
men's [1] 101/18
mental [4] 73/18 107/1 108/14 108/19
mention [1] 132/12
mentioned [6] 40/14 42/8 46/11
81/21 81/25 101/10
met [5] 17/3 19/14 60/15 61/23
131/19
metal [1] 75/12
Michael [1] 5/2
microphone [2] 31/22 33/18
microphones [1] 39/1
middle [10] $12 / 20$ 13/18 $13 / 18$
14/2 15/17 15/19 18/18 22/21
63/2 77/20
might [14] 22/17 29/10 39/1 44/17 45/24 53/19 54/14 54/23 75/3
75/12 80/12 126/6 127/18 128/1
mike [3] 38/12 38/17 38/19
mile [1] 13/25
Milwaukee [1] 4/12
mind [1] 126/20
mine [3] 38/17 38/19 44/11
mini [1] 58/14
mini-van [1] 58/14
minimalist [1] $87 / 1$
minimize [1] 99/10
minor [2] 63/12 112/8
minority [10] 15/8 15/12 16/5
16/15 16/16 $17 / 4$ 20/21 20/25
21/1 21/5
minute [4] 17/1 26/8 43/4 134/23
minutes [3] 43/3 111/13 111/21
miscellaneous [2] 85/23 86/2
mislead [1] 124/1
misleading [3] 117/5 123/6 123/21
misleads [1] 124/8
missing [3] 101/4 130/21 132/9
misunderstood [1] 91/14
model [47] 47/15 47/18 49/2 49/12 51/19 52/5 56/9 56/11 57/1 57/24 60/5 60/12 60/17 60/25 61/16 61/25 74/7 74/9 74/20 75/17 75/21 76/1 78/2 81/5 85/12 86/22 88/9 89/15 92/13 92/21 93/7 93/15 93/24 93/25 97/8 101/13
102/25 105/5 105/6 105/9 106/24 107/20 112/7 112/18 113/2 117/6 117/25
model's [1] 94/10
modeled [4] 49/15 59/19 72/12 101/20
modeling [8] 46/9 48/11 48/15 49/10 51/7 62/10 107/6 118/8 models [17] 35/17 53/10 56/5 61/2 61/15 61/19 74/14 79/9 79/12
80/3 80/10 84/17 95/4 107/12
113/2 113/14116/7
Mohr [2] 5/4 6/6
mom [1] 81/16
moment [2] 56/22 138/15
Monday [6] 26/1 26/2 26/12 31/18 138/25 139/4
money [1] 113/10
morning [8] 4/5 4/14 4/19 6/14
11/1 28/10 138/8 138/25
morning's [1] 26/7
most [5] 47/23 61/20 86/5 117/21
133/6
mostly [1] 74/10
motion [27] $1 / 5 \quad 1 / 5 \quad 3 / 5 \quad 3 / 7 \quad 3 / 14$
7/3 8/6 8/14 9/15 9/20 10/9 15/5
21/21 25/12 28/19 29/24 30/8
30/23 62/15 62/17 62/22 64/14
65/5 65/6 $112 / 1$ 113/1 125/17
motions [1] 132/17
motivated [1] 20/14
move [12] 10/24 38/1 39/6 46/4
46/5 56/11 58/25 66/13 66/17
93/11 123/7 135/2
moved [8] 46/1 57/20 59/6 59/25
63/22 92/9 97/12 97/21
movie [1] 111/5
moving [9] 9/23 59/17 62/24 66/14 67/5 67/13 67/25 68/13 122/2
mower [2] 84/9 106/18
Mr [7] 16/18 28/4 33/24 65/20
72/2 82/21 128/22
Mr. [106] $7 / 258 / 68 / 198 / 259 / 13$ 9/15 9/24 10/7 10/10 10/19 10/25 11/2 $11 / 1313 / 313 / 513 / 1714 / 6$ 15/11 15/17 16/15 16/19 17/3
18/5 18/25 19/5 22/1 22/9 22/23
22/25 25/3 28/23 30/22 30/25 31/4 32/20 32/21 33/17 34/9 $35 / 1036 / 237 / 3$ 38/11 38/13 38/1 5 39/7 40/22 51/23 54/9 54/1 1 56/25 63/20 64/5 65/4 65/18 65/19 67/7 67/12 69/13 69/21 69/23 70/2 71/20 72/5 78/5 79/1 82/20 82/20 83/7 84/5 86/24 88/16 89/17 98/7 98/19 104/5 107/11 108/6 109/15 110/1 112/2 112/8 116/16118/11118/13119/1 119/22 121/10 121/22 122/16 122/24 123/2 123/4 129/16 129/21 131/20 132/25 133/7 135/9 135/11 135/14 136/1 136/2 136/3 137/5 137/16 138/19
Mr. Austin [17] 28/23 33/17 34/9 35/10 36/2 37/3 38/15 39/7 64/5 65/18 65/19 69/13 69/21 70/2
119/1 119/22 122/24
Mr. Austin's [1] 38/13
Mr. Avery [7] 10/19 13/3 13/5 16/15 135/11 136/2 137/16
Mr. Avery's [3] 54/9 54/11 86/24
Mr. Buting [2] 22/25 116/16
Mr. Dao [1] 9/15
Mr. Dassey [3] 135/9 135/14 137/5
Mr. Fallon [4] 10/7 14/6 18/5 32/21
Mr. Gahn [4] 22/1 22/9 22/23 25/3
Mr. Huang [1] 9/13
Mr. Kratz [22] 30/25 31/4 32/20
40/22 56/25 65/4 67/7 67/12
$71 / 2072 / 579 / 182 / 2083 / 788 / 16$
89/17 104/5 107/11 109/15 110/1
112/8 118/11 123/4
Mr. Kratz's [2] 78/5 84/5
Mr. Lawrence [14] 8/6 8/19 8/25
9/24 10/25 11/2 11/13 13/17
15/11 15/17 16/19 17/3 18/25 19/5
Mr. Strang [22] 7/25 10/10 30/22
38/11 51/23 63/20 69/23 98/7
98/19 108/6 112/2 121/10 122/16 123/2 129/16 129/21 131/20
132/25 133/7 136/1 136/3 138/19
Mr. Strang's [2] 118/13 121/22
Mr. Wiegert [1] 82/20
must [3] 10/14 108/4 114/23 mute [1] 27/12

## mutilation [1] 136/23

my [73] 4/16 8/13 8/20 13/11 13/20 21/6 21/17 22/4 23/12 24/16 29/3 31/21 32/4 33/15 33/20 34/15 34/22 34/22 35/19 37/6 38/12 39/11 39/16 41/19 42/23 44/4 46/25 51/15 57/19 58/24 59/4 59/24 60/25 61/4 64/9 67/24 72/24 77/4 78/19 79/2 79/5 79/7 87/3 87/25 92/6 92/23 93/8 94/16 98/24 103/15 103/25 105/11 106/2 107/11 108/5 108/12 108/15 108/15 109/20 109/21 110/18 115/11 123/18 130/9 130/19 131/24 133/20 134/1 136/4 138/1 139/1 140/9 140/13

| M | noticeable [1] 101/18 | $/ 3$ |
| :---: | :---: | :---: |
| $\begin{aligned} & \left.\hline \begin{array}{l} \text { myself [5] } \\ 116 / 9 \end{array}\right] 36 / 737 / 765 / 6104 / 17 \\ & \hline \end{aligned}$ | notify [2] 27/20 137/16 November [15] 35/20 42 | omitted [4] $84 / 1784 / 1988 / 889 / 2$ |
| N | 78/17 78/17 78/23 79/17 80/12 | 115/24 133/7 |
| nail [1] 107/15 | /6 138/6 | 2 |
| name [18] 4/22 6/2 8/22 8/22 | November 12 [1] 78/17 | 17/4 18/2 19/10 35/3 42/25 47/19 |
| 12/19 13/18 15/23 15/24 18/9 | November 12th [2] 42/3 83/22 | 64/25 69/8 80/24 89/1 107/19 |
| $33 / 1433 / 1433 / 15$ 33/19 33/20 | November 5 [3] 83/21 124/6 138/6 | 117/6 119/9 120/1 128/18 |
| 43/23 61/8 135/16 135/25 | November 5th [1] 35/20 | open [1] 136/11 |
| names [4] 5/17 5/25 68/9 112/19 | number[11] 8/14 11/18 18/12 | opening [27] 28/20 29/2 30/10 |
| Nancy [2] 5/5 6/7 | 32/12 72/1 88/4 94/4 97/2 98/9 | 30/15 31/5 31/10 76/5 100/7 |
| narrate [1] 65/18 | 98/20 $115 / 19$ | 100/12 108/16 $122 / 11126 / 3$ |
| narration [1] 69/2 | numbered [2] 8/12 137/14 | 128/24 128/25 129/1 129/3 129/6 |
| narrative [9] 37/6 39/16 44/4 | numbers [1] 106/23 | 130/9 130/24 131/6 131/7 131/22 |
| 46/25 51/16 59/5 59/24 87/3 | numerous[2] 62/15 116/18 | 131/23 131/24 132/8 132/12 134/8 |
| $97 / 10$ | 0 | openings [1] 31/16 |
| Nathan [2] 5/2 6/5 | object [4] 56/17 62/21 133/18 |  |
| near [3] 35/12 71/9 79/14 | 134/2 | opinion [4] 22/16 25/8 42/21 |
| necessarily [3] 31/7 50/5 115/6 | objected | 42/23 |
| necessary [1] 26/15 | objection [10] 14/16 31/4 38/3 | opportunity [3] 24/2 31/23 113/18 |
| need [19] 13/8 24/20 30/20 32/25 | 54/5 64/1 120/1 121/23 130/23 | opposite [1] 55/7 |
| 49/20 50/5 55/14 62/15 62/17 | 131/8131/19 | optical [1] 101/2 |
| 71/19 76/14 86/15 88/22 103/7 | objectionable [5] 123/9 128/25 | option [1] 51/10 |
| 106/22 112/25 116/6 121/1 134/19 | 130/17 133/2 133/5 | options [1] 77/1 |
| needs [4] 22/14 30/14 41/22 41/23 | objections[5] 31/15 112/3 127/25 | or [250] |
| Nelesen [2] 5/1 6/5 | 128/18 136/5 | orbit [1] 78/21 |
| neutral [3] 17/10 19/4 21/12 | objects [14] 40/5 45/20 46/14 | order[12] 16/6 22/2 22/20 23/13 |
| never [4] 56/6 74/24 89/3 91/24 | 46/20 47/8 47/21 48/25 49/4 51/3 | 24/18 25/19 27/3 32/24 33/2 33/4 |
| new [5] 10/20 105/22 110/19 | 65/3 87/9 120/20 122/8 129/6 | 110/5 138/21 |
| 113/11 113/12 | observe [1] 106/1 | orders [1] 24/6 |
| news [3] 26/24 27/5 27/6 | obtain [1] 92/24 | orientation [1] 80/6 |
| newspaper [1] 27/7 | obtained [3] 43/11 49/9 61/17 | original [3] 105/6 105/9 133/9 |
| next [7] 17/7 36/6 55/5 55/11 57/9 | obviously[11] 12/4 42/24 73/17 | originals [1] 53/25 |
| 105/2 132/25 | 91/5 92/1 98/18 109/11 113/22 | originated [1] 107/19 |
| nicer [1] 45/22 | 126/9 129/1 137/13 | orthogonal [1] 44/7 |
| night [2] 12/18 67/3 | occurs [1] 40/16 | other [76] 6/17 7/11 7/15 8/19 9/6 |
| No. [20] 8/13 34/19 37/4 37/16 | October [1] 115/7 | 13/9 20/17 22/10 24/19 25/17 |
| 51/13 54/3 54/24 56/23 56/25 | October 31 [1] 115/7 | 27/2 27/24 29/1 29/2 31/15 36/4 |
| 57/18 57/19 59/1 59/4 59/14 | off [19] 32/22 51/21 52/4 52/10 | 37/8 37/8 37/18 48/12 48/14 |
| 59/23 59/24 62/4 62/4 128/4 | 54/20 68/9 68/23 72/17 79/24 | 48/23 49/1 49/5 49/22 50/15 |
| 130/12 | 81/4 82/5 84/7 92/15 96/19 98/9 | 50/19 51/2 51/2 51/5 51/20 52/22 |
| No. 1 [2] 34/19 128/4 | 114/9 117/14 123/13 138/10 | 54/8 56/11 57/18 57/23 60/4 |
| No. 10 [2] 56/23 56/25 | offense [4] 11/12 11/15 17/25 | 60/10 64/24 65/1 65/8 65/9 67/21 |
| No. 16 [3] 57/18 57/19 59/14 | 135/14 | 68/10 75/21 79/23 82/12 82/23 |
| No. 2 [4] 37/4 37/16 54/24 62/4 | offenses [2] 11/17 11/18 | 84/3 84/15 85/18 87/10 87/15 |
| No. 20 [2] 59/1 59/4 | offer [4] 58/8 63/25 89/16 131/3 | 88/13 91/20 94/15 100/25 104/12 |
| No. 23 [3] 59/23 59/24 130/12 | offered [5] 13/17 17/13 120/6 | 104/17 108/2 114/6 119/18 122/12 |
| No. 31 [1] 51/13 | 129/12 132/25 | 126/4 126/11 128/7 130/16 131/13 |
| No. 4 [2] 54/3 62/4 | offers [1] 13/14 | 132/1 132/11 132/19 133/8 136/12 |
| No. 90 [1] 8/13 | office [2] 134/1 136/8 | 137/13 138/17 138/22 |
| non [3] 18/23 99/13 133/2 | officers [6] 36/7 37/8 50/18 91/21 | others [2] 50/11 109/23 |
| non-digital [1] 99/13 | 92/9 104/18 | otherwise [2] 31/18 35/23 |
| non-objectionable [1] 133/2 | Official [3] 2/2 140/4 140/19 | ought [5] 31/1 41/21 137/5 137/21 |
| non-race [1] 18/23 | offset [1] 124/4 | 139/6 |
| none [3] 54/6 95/4 109/8 | often [1] 14/6 | our [22] 12/13 12/16 13/2 39/1 |
| Nonetheless [1] 10/11 | Oh [8] 7/10 28/1 74/4 82/25 91/14 | 43/8 45/11 47/4 47/5 47/18 57/20 |
| noon [2] 23/10 29/20 | 105/8 109/4 131/23 | 59/6 70/11 70/13 70/14 70/14 |
| nor [2] 26/25 121/14 | Ohio [2] 13/8 13/11 | 70/15 72/22 87/24 97/20 97/21 |
| NORMAN [2] 1/16 4/11 | okay [60] 7/10 7/21 18/1 25/15 | 111/12 132/17 |
| north [1] 57/12 | 28/14 29/18 37/24 70/21 71/18 | ours [1] 138/14 |
| northeast [2] 44/23 45/4 | 72/22 73/13 74/4 75/7 76/1 76/15 | ourselves [1] 104/18 |
| northern [1] 78/23 | 76/22 77/17 78/8 78/19 80/10 | outlet [4] 102/1 102/4 102/7 |
| northwest [3] 59/8 78/22 113/4 | 81/1 82/14 83/1 83/13 84/3 84/15 | 102/14 |
| note [4] 7/23 9/11 97/15 137/14 | 84/22 85/25 86/14 86/21 87/15 | outlets [1] 102/10 |
| noted [2] 105/19 106/17 | 87/19 91/8 91/9 92/8 93/1 93/23 | outlined [1] 20/3 |
| notes [4] 35/19 41/19 98/24 140/9 | 94/14 94/23 95/2 96/2 96/14 97/1 | outlines [1] 34/15 |
| nothing [15] 9/15 11/7 13/17 | 98/6 99/6 99/17 99/22 100/20 | outside [6] $7 / 25$ 8/2 15/2 61/4 |
| 20/10 84/3 109/8 109/13 109/17 | 102/3 103/7 107/14 109/7 110/3 | 107/11 108/15 |
| 109/20 110/24 111/9 117/17 | 110/13 111/2 129/1 136/16 137/22 | outweighed [2] 118/23 125/10 |
| 117/19 122/9 129/17 | 138/11 139/12 | over [20] 8/16 22/2 34/22 38/22 |

over... [16] 42/17 52/9 57/9 57/15 58/17 66/22 66/23 69/8 71/3 71/6 76/12 86/7 106/5 113/20 120/11 120/12
overall [1] 93/9
overhead [1] 52/8
overlap [1] 39/4
overview [7] 51/17 54/19 56/6
56/25 67/13 84/6 98/3
own [6] 63/20 90/5 121/15 121/16 133/20 136/4

## P

package [3] 79/3 80/17 95/19
packet [2] 53/6 54/1
page [11] 3/2 16/10 39/16 47/1
51/15 72/8 79/1 79/1 107/15
108/4 108/5
pages [2] 62/21 137/14
paint [6] 47/25 48/1 48/3 75/13
105/24 106/4
painted [1] 47/6
pair [1] 101/18
palet [1] 81/4
pallet [1] 72/17
pan [1] 66/11
pane [1] 75/16
panel [13] 4/20 4/22 4/23 5/9 5/14 8/4 14/20 $15 / 5$ 17/4 17/6 25/22 25/24 28/6
paper [3] 27/9 95/6 106/18
parcel [1] 113/4
Pardon [1] 7/8
parent [1] 9/3
parentage [1] 9/2
parenthetically [1] 120/16
parietal [2] 107/2 107/10
$\begin{array}{llllll}\text { part [24] } & 13 / 16 & 16 / 2 & 17 / 2 & 17 / 7\end{array}$
19/6 20/3 20/7 22/12 28/21 29/16 67/4 81/2 81/3 83/5 87/20 87/25
95/22 99/11 104/16 107/17 125/12 126/2 131/7 136/7
participation [1] 6/19
particular [23] 24/7 43/7 44/3
45/20 47/12 47/16 48/2 48/20
51/19 57/12 65/12 76/8 78/24
79/10 79/21 86/4 94/15 101/1
103/5 106/1 107/9 126/1 126/15
particularly [7] 74/5 80/11 89/19
103/8 113/12 116/17116/18
particulars [1] 92/19
parties [25] 4/3 5/11 5/19 15/10
15/21 24/13 25/5 26/6 28/15
29/25 38/23 109/23 124/15 125/14
126/5 127/6 128/14 128/20 129/20
133/12 133/17 133/25 137/7 137/9
137/24
partly [1] 8/18
partner [1] 76/16
parts [4] 85/17 86/2 110/16 123/19
party [13] 14/18 21/22 52/16
133/18 134/2 134/10 134/24
134/24 135/7 135/18 135/22 137/3 137/8
pas [1] 83/16
pass [1] 26/14
paste [1] 47/14
path [1] 120/8
pathologist [1] 69/3
Patricia [1] 5/8
Patrick [2] 1/10 5/5
patrol [15] 28/24 34/1 34/3 34/6
$34 / 735 / 336 / 1537 / 837 / 989 / 12$
90/10 95/20 95/23 96/1 97/13
Paul [2] 5/1 6/4
pause [2] 65/25 111/5
pavement [1] 88/24
PDF [1] 136/13
Pedersen [1] 5/5
peeled [1] 84/7
PEG [1] 110/25
pejorative [1] 114/2
pending [4] 11/14 11/17 11/18 18/12
people [5] 8/24 32/2 74/21 83/2 91/2
per [2] 64/10 64/13
percent [1] 11/8
perceptively [1] 114/2
peremptory[13] $1 / 43 / 45 / 125 / 21$
5/23 8/5 8/7 9/24 10/17 14/19
15/6 16/24 17/5
perfect [5] 32/16 76/10 76/23
136/9 136/11
perfectly [1] 119/8
perform [3] 24/3 36/4 60/14
perhaps [12] 53/22 55/22 56/12
62/19 69/14 74/16 78/25 86/5
100/5 113/5 126/18 133/2
periodically [1] 38/21
permits [1] 35/2
permitted [1] 5/13
person [11] 1/23 4/15 8/20 30/6 60/17 61/23 94/15 111/3 135/20 135/21 137/2
personal [2] 47/25 113/9
personally [1] 42/11
personnel [1] 35/21
persons [3] 5/25 50/6 51/3
perspective [10] 48/22 56/3 57/21
77/14 77/15 78/24 81/22 86/4 95/9 127/1
perspectives [1] 56/12
Peterson [3] $119 / 11124 / 17126 / 8$
Philip [1] 5/2
philosophy [1] 87/1
phone [1] 12/17
photo [11] 47/15 98/10 129/14
129/17 129/23 130/4 130/8 130/11 130/11 131/8 131/14
photograph [21] 36/14 39/15
47/12 47/14 48/1 74/21 74/25 75/2 78/2 82/1 85/9 87/7 93/2
96/19 101/22 105/16 105/17
113/25 116/22 130/23 131/3
photographed [1] 47/17
photographic[5] 75/1 82/2 97/16
113/15 113/16
photographically [1] 115/22
photographs [33] 37/7 49/9 62/7
75/20 97/13 97/18 98/16 98/20
99/6 99/11 101/15 101/19 101/21
103/11 103/14 103/15 103/20
106/3 113/22 115/21 115/25
116/16 116/19 116/21 116/24
117/23 118/6 118/7121/13124/4
126/24 128/23 128/24
photos [4] 98/9 98/9 98/11 129/22
Photoshop [1] 99/9
phrase [1] 20/6
physically [4] 8/4 51/1 60/15
77/13
Piaskowski [1] 5/8
pick [2] 72/20 82/16
picked [3] 72/17 107/4 107/5
picking [2] 31/22 81/10
picks [2] 39/4 113/17
pictographic [1] 116/3
picture [6] 44/3 58/10 61/11 78/12
93/14 100/10
pictures [2] 65/4 99/13
piece [4] 42/21 52/9 56/17 71/2
pieces [4] 87/12 87/16 95/5 132/9
Pilot [1] 36/15
pine [2] 79/14 79/19
pixels [1] 114/5
place [8] 55/2 58/15 97/14 103/18
106/4 106/10 106/20 137/24
placed [2] 97/10 122/3
placement [1] 97/4
PLAINTIFF [1] 1/4
planet [1] 78/21
planning [1] 81/16
plastic [1] 52/9
play [3] 64/5 65/13 98/2
player [1] 111/1
please [20] 4/4 6/2 26/14 27/14
27/20 29/5 30/1 33/13 33/13
34/20 36/13 37/5 39/10 39/12
44/13 62/14 71/22 81/14 105/7 105/7
plus [1] 49/7
point [34] 19/7 23/1 31/14 51/24
59/1761/3 63/25 66/6 70/10 70/12 70/15 79/7 79/7 84/10 90/8
90/13 94/17 98/4 98/13 102/21
105/5 109/21 109/21 120/2 120/4
123/8 125/14 125/20 125/23
127/17 128/13 128/20 129/2
129/21
pointed [3] 88/16 97/11 107/11
pointer [3] 44/9 54/25 99/25
pointing[2] 61/7 127/20
points [8] 76/9 76/10 76/13 76/18
$76 / 2077 / 377 / 4117 / 22$
pool [1] 8/25
pop [1] 110/21
porch [1] 96/8
portion [7] 44/7 44/21 45/2 45/10
58/5 65/21 135/3
portions [1] 37/18
portrayed [2] 36/12 69/17
portraying [1] 90/2
position [6] 40/5 59/7 68/16 70/19
81/9 125/17
positioned [2] 50/25 68/3
positioning [1] 70/6
positions [1] 90/24
possession [2] 137/18 138/3
possible [8] 24/9 78/6 81/13 90/20
98/15 108/22 117/15 126/18
possibly[2] 126/12 131/21
pot [1] 113/19
potential [1] 9/21
potentially [3] 117/5 123/6 123/20
PowerPoint [4] 108/24 109/19
109/20 128/24
Powers [6] 13/8 $13 / 1014 / 8$ 16/7 16/13 20/19
practical [1] 10/12
precise [2] 128/4 128/9
preclude [1] 16/17
prefer [1] 137/7
prejudicial [2] 122/10 125/11
preliminary [4] 26/2 29/12 29/17 133/10
prepared [1] 140/8

|  | $\text { 3] } 9$ |  |
| :---: | :---: | :---: |
| preparing [1] $90 / 11$ <br> presence $[3] \quad 7 / 68 / 215 / 2$ <br> present $[9] 1 / 161 / 2028 / 628 / 20$ <br> $52 / 1783 / 2084 / 984 / 1713 / 5$ <br> presentation [4] $108 / 24109 / 19$ | 36/2 | $r$ [8] 10 |
|  | 込 | 110/6 110/17 120/15 |
|  |  | nale [1] |
|  | 0/8 | V[5] 22/7 22/10 22/15 23/4 |
|  | 1 |  |
| presentation [4] 126/3 128/25 108/24 109/19 | proven [1] 138/4 | [2] 64/13 110/ |
| presented [2] 27/16 128/13presenting [1] $82 / 11$ | provide [7] 17/8 | render [1] 110/14 |
|  |  | dered [1] 64/13 |
|  |  | 0/4 |
| preserve [2] 22/5 23/13 preserved [2] 23/15 24/18 | 52/21 53/9 54/1 62/2 62/6 95 |  |
|  |  | read [9] $5 / 25$ 6/2 6/13 17/20 26/24 |
| preserved [2] 23/15 24/18 <br> pretend [1] 97/25 |  |  |
| preview [1] $136 / 20$   <br> previous $[5]$ $57 / 7$ $59 / 6$ <br> $66 / 7$ $68 / 7$   | pr | 106/2 134/ |
|  | pr |  |
| previou <br> previously [4] 26/21 53/1 68/17 |  | 21/25 81/1 |
| previously [4] 26/21 53/1 68/17 133/12 prima [3] 8/11 9/9 16/23 primarily [4] 12/12 75/22 82/21 | purchase [2] | 23/24 |
|  | purchased [2] | [2] |
|  |  |  |
| 124/3 ${ }_{\text {primary [2] }}$ 17/15 44/24 | pu | ally [16] 13/23 |
|  | pu | 16/8 117 |
| primary [2] [2] $17 / 1544 / 24$ principle [1] 135/19 print [1] 104/6 | purp | $16 / 8117$ |
| $\begin{aligned} & \text { print [1] } 104 / 6 \\ & \text { printed }[2] \quad 15 / 19 \quad 100 / 6 \\ & \text { prints [2] } \\ & 53 / 9 \\ & \hline \end{aligned} 09 / 15$ |  |  |
| prints [2] 53/9 109/15 <br> prior [3] 127/22 133/11 133/20 | $111$ |  |
| prism [7] 71/4 71/7 71/9 71/13 <br> 71/15 76/13 76/17 <br> private [1] 45/9 | put [26] $21 / 25$ 22/1 |  |
|  | 7/13 78/24 81/16 | bly [2] 124/25 |
|  | /24 103/3 | ons [4] 13/2 20/8 20/15 27/3 |
| private [1] 45/9 probably [19] 31/23 38/13 39/3 | 106/1 |  |
| 49/19 63/9 69/2 87/9 92/6 101/14 106/25 112/13 113/1 116/6 117/15 | 109/18 111/4 126/25 130/10 1 | 23/23 |
|  | 135/18 135/19 135/20 | recalls [1] |
|  |  | receive [2] 54/3 |
| $\begin{array}{llll}118 / 5 & 129 / 13 & 130 / 5 & 136 / 8 \\ \text { probative }[3] & 117 / 20 / 13 & 118 / 23 & 125 / 9\end{array}$ problem [9] 112/6 116/14 121/9 | 10 | 4] 54/7 61/22 74/17 |
|  | Q |  |
|  | qualified [1] 5 | /7 |
|  | qu |  |
| problems [1] 73/18 <br> proceed [3] $31 / 1831 / 1938 / 23$ <br> proceedings [9] $1 / 253 / 33 / 626 / 8$ | quality [1] 113/15 | 14/13 14/25 |
|  | Quantico [1] 61/18 | 111/23 |
|  | quarrel [2] 31/9 75/8 | recognize [4] 9/21 15/10 21/7 |
|  |  |  |
| process [16] 4/19 5/20 5/22 9/25 12/11 14/11 42/16 46/24 47/10 48/9 60/24 62/14 64/8 67/2 69/1 | question [24] 11/5 11/9 11/9 17/18 | recognizes [4] 16/11 40/23 40/25 |
|  | 17/21 18/1 18/6 20/1831/15 38/5 | 120/4 |
|  | - | recollection [3] 13/21 |
| leressing [1] 43/20 | (108/8 | reconstruction [8] 34/8 34/16 |
|  | 110/18 119/6 119/23 119/25 | 40/12 60/7 60/8 88/17 88/20 90/9 |
| profession [1] 113/12 | questioning [1] 20/12 | reconstructions [1] 12 |
|  | questionnaire [10] 11/3 11/4 12/14 | reconv [301 4/4 7/24 |
|  | 14/2 15/18 15/24 17/17 17/19 | cord [30] 4/47/24 |
| ler $\begin{aligned} & \text { programmer [1] 95/17 } \\ & \text { prohibited [1] 28/3 }\end{aligned}$ |  | $18$ |
|  |  |  |
| prohibiting [1] 121/14 | 46/11 94/24 96/3 114/15 114/1 | 3/18 53/25 54/4 |
|  |  | 65/16 111/25 119/12 |
| $\begin{aligned} & \text { promo [1] } 27 / 8 \text { proof [1] } 58 / 8 \end{aligned}$ | quicker [1] $90 / 23$ | 10 |
| proper [2] 55/20 117/24properly [1] 1118/10properties [1] 36/18 | 2] $5 / 2232 /$ |  |
|  | quite [6] $11 / 112 / 1483 / 1386 / 1$ | records [1] 40/18 |
| property [26] 35/12 35/22 36/3 36/9 36/17 39/1841/18 42/2 42/5 44/20 47/22 49/12 49/20 51/18 | 96/20 101/6 | [1] 58/22 |
|  | R | ation [1] 119/1 |
|  |  |  |
| 65/21 68/1 68/14 93/9 113/3 |  20/2 20/14 20/23 21/12 | Reese [2] 97/14 98/13 reexplain [1] 70/7 refer [3] 36/11 74/15 9 |
| proportion [2] 94/13 112/22 <br> proportionate [1] 94/11 <br> proportions [1] 119/9 <br> propose [2] 134/3 134/14 <br> proposed [3] 31/16 133/19 134/8 <br> proposing [1] 133/13 | radio [1] $27 / 6$ | [2] 39/1 |
|  | raise [6] 13/10 16/4 20/21 $21 / 8$ |  |
|  | $\begin{array}{r} 21 / 2233 / 9 \end{array}$ | 16/8 33/2 34/2 |
|  | $\left\lvert\, \begin{aligned} & \text { raised [3] } 14 / 6 \text { 14/16 } 128 / 1 \\ & \text { raising[[2] } 16 / 1716 / 22 \\ & \text { rake[3] } 97 / 3115 / 18128 / 5 \end{aligned}\right.$ | referring [11] 37/15 37/20 39/8 48/5 58/17 69/6 87/23 102/22 |

$\mathbf{R}$
referring... [3] 103/17 103/25
104/4
reflect [3] 65/16 71/7 87/20
reflection [1] 64/19
reflective [2] 64/21 70/24
reflects [2] 14/21 114/5
refreshing [1] 108/12
refrigerator [1] 81/17
regard [1] 28/25
regarding [7] 27/14 28/18 30/14
30/17 112/1118/13119/6
regular [1] 111/4
related [6] 12/19 18/24 20/1 30/16
48/25 132/20
relating [1] 17/18
relationship [10] 41/3 48/21 49/4
51/1 51/5 56/16 56/16 57/11 65/2 94/21
relationships [9] 56/14 75/7 75/23
81/22 87/8 $114 / 9114 / 18122 / 6$
122/7
relative [2] 12/10 94/12
relatively [2] 89/1 110/11
relaxed [1] 9/5
released [2] 25/13 25/17
relevance [6] $117 / 12$ 120/8 $122 / 17$
127/25 128/1 128/16
relevancy [1] 120/10
relevant [5] 37/18 $117 / 19$ 126/12
131/4 131/13
relied [2] 93/19 97/13
rely [1] 88/13
relying [2] 78/2 117/5
remain [3] 5/21 94/13 112/9
remainder [1] 104/11
remaining [3] 4/20 5/15 17/4
remember[7] 13/24 42/11 52/7
87/13 87/13 129/8 129/9
remembering [1] 54/24
reminder [1] 27/25
remote [1] 32/5
removal [2] 17/14 123/16
remove [5] 10/17 17/6 21/4 27/8
66/4
removed [1] 112/11
removing [3] 15/7 56/7 56/8
render [3] 5/19 101/1 110/14
rendered [5] 48/7 53/10 64/13
66/24 79/6
rendering [2] 66/3 100/5
renderings [3] 54/10 79/23 121/16
renders [1] 62/16
repeat [1] 108/6
replace [2] 129/13 129/17
replication [1] 73/9
report [16] 37/2 37/7 39/16 44/5
46/25 51/16 57/19 59/5 59/25
79/2 79/5 79/8 79/12 101/6
101/10 109/12
reported [2] 2/1 140/6
reporter [4] 2/2 111/13 140/5
140/19
reports [1] 106/2
representation [3] 44/2 86/23
115/24
representations [2] 120/19 121/25 represents [1] 4/16
request [3] 21/11 28/14 137/11
requested [2] 92/19 92/20
requests [3] 88/5 103/18 $134 / 4$
require [4] 20/4 127/19 132/21
$136 / 13$
required [2] 16/20 18/1
requirement [1] 6/18
requires [1] 119/15
requiring [1] 127/4
reservations [1] 129/21
reset [1] 91/17
residence [26] 45/9 51/17 52/1
52/7 53/3 57/5 57/6 57/7 57/8
57/10 57/15 57/23 59/9 60/2 60/4
66/12 66/15 66/17 67/5 67/18
68/2 79/15 86/7 90/22 96/5
103/16
respect [4] 125/12 126/4 127/2
128/2
respond [1] 138/19
responding [1] 10/4
responses [2] 10/11 13/2
responsibilities [1] 34/5
responsible [1] 13/1
rest [3] 6/24 13/13 111/13
result [1] 12/21
resulting [1] 123/14
resume [1] 34/14
retire [1] 7/16
retrieve [1] 47/22
retyping [1] 136/14
revelation [1] 10/21
reverse [2] 8/7 111/5
review [1] 19/10
Richard [2] 5/4 6/6
right [62] $4 / 167 / 107 / 1414 / 4$
14/12 16/3 23/24 25/2 29/18 30/7
30/22 31/19 33/9 35/24 37/11
38/4 41/17 42/6 47/22 49/6 49/10 49/16 51/6 51/11 52/3 53/22
56/21 58/18 60/6 61/10 62/1 62/9
63/14 66/8 69/20 72/13 73/16
78/19 79/3 81/23 85/21 86/20
92/2 94/2 94/19 95/4 98/4 101/9
106/12 106/19 106/21 107/24
108/8 108/20 109/14 110/18
111/11 124/15 130/10 133/8
136/15 139/14
rise [1] $7 / 19$
risk [3] 119/19 119/20 121/9
road [1] 45/5
roof [13] 51/1951/20 51/21 52/4
52/5 52/11 54/21 56/8 66/16 67/7
67/14 84/7 117/13
rooftops [1] 123/17
room [12] 7/1 7/11 7/13 7/16 7/20
7/22 7/24 26/10 66/13 66/13
86/25 86/25
rooms [6] 51/21 52/6 52/23 53/3 66/17 87/4
roughly [1] 68/25
RPR [2] 2/1 140/19
rule [2] 121/5 121/19
ruled [1] 30/20
ruling [1] 131/5
run [2] 77/19 110/22
running [1] 111/3
runs [1] 45/6
rust [2] 72/14 72/20
rusty [2] 72/16 72/21

## S

Saari [1] 5/2
said [8] $13 / 24$ 68/7 73/16 89/24
109/13 117/15 135/17140/13
Salomon [1] 5/6
salvage [12] $35 / 1336 / 336 / 836 / 17$
$39 / 1841 / 1642 / 1844 / 844 / 25$
51/18 63/2 92/4
same [25] 12/19 13/9 18/9 35/21
48/6 53/1 56/10 59/13 68/25 69/7 74/15 80/13 80/24 85/9 90/7
94/13 95/1 100/2 100/24 101/16
101/20 115/22 119/18120/11 125/2
sample [7] 22/5 22/7 23/13 23/23
24/14 24/19 25/4
samples [1] $22 / 3$
Samurai [3] 55/3 55/7 84/13
satellite [1] 70/6
satisfactory [1] 32/15
satisfied [5] 19/3 19/12 83/24 130/15 135/4
satisfies [1] 17/8
satisfy [3] $22 / 1183 / 19129 / 15$
saw [6] $8 / 348 / 16$ 52/20 66/19
72/23 104/18
saying [3] 89/6 108/10 126/21
says [8] 38/17 68/9 73/5 76/22
106/8 108/19 126/9 134/18
scale [3] 35/16 $119 / 5$ 119/9
scaled [1] 74/16
scenario [1] 90/2
scene [34] 30/19 39/17 45/19 48/25 49/3 50/13 50/16 56/2 60/8 62/9 62/25 65/9 74/25 75/20
79/12 80/4 80/7 81/19 81/24 82/2
83/16 83/25 84/10 87/7 91/19
91/2 1 93/9 105/3 105/4 115/22 118/4 121/6 124/1 125/5
Scenery [1] 37/2
scenes [2] 35/9 40/13
scheduled [2] 26/13 29/24
Schmidt [2] 5/1 6/4
school [1] 70/13
Schuette [2] 5/3 6/5
science [1] 121/1
scientific [1] 24/12
scientifically [1] 24/9
scope [1] 112/5
Scott [1] 5/7
screen [13] 36/12 38/7 43/22
46/22 52/20 57/13 57/16 58/6
58/18 61/10 94/25 95/6 95/7
screens [1] 32/23
search [3] 35/23 35/23 91/22
searchers [1] 92/3
searches [1] $92 / 7$
seasons [1] 80/19
seat [2] $97 / 298 / 17$
seated [5] 4/23 6/8 6/23 25/23 33/13
second [11] $21 / 15$ 30/14 46/16 62/17 64/10 64/11 64/13 69/6 130/14 138/2 138/4
seconds [3] 43/1 43/4 43/6
secrecy [1] 6/18
sections [1] 104/12
seeing [9] 66/21 67/10 73/7 79/15
80/3 91/4 100/18 131/6 132/14
seems [3] 127/3 127/12 133/6
seen [10] 68/21 91/11 101/15
101/21 116/16 116/20 116/25 122/10 129/7 135/23
selected [8] 5/25 7/18 14/18 $15 / 4$
16/12 25/10 25/13 73/10
selecting [1] 81/4
selection [2] 4/19 22/21
send [2] 81/16 136/10
sending [2] 70/23 138/22
sense [9] 9/18 30/17 64/14 74/21
75/1 81/18113/24114/2 123/12
sent [4] 23/8 61/18 92/16 92/22
sentence [1] 135/1
separate [7] 52/19 66/21 67/1
76/18 109/18 123/4 137/10
September [1] 140/15
sequence [1] 66/23
sequenced [1] $8 / 12$
sequestered [1] 26/22
series [2] 131/21 132/8
serious [1] 73/18
seriously [1] 10/23
serve [3] 6/1 7/18 15/4
serves [1] 13/12
service [3] 6/10 6/12 6/15
services [1] 35/15
serving [1] 6/9
set [5] 9/23 31/23 53/16 70/9 90/20
setting [3] 14/10 32/21 73/19
seven [4] 5/14 8/5 36/6 42/12
several [3] 10/11 98/11 98/14
shaded [1] 104/10
shades [1] 82/12
shadow [4] 100/4 100/11 100/16
100/17
shadowing [1] 79/24
shadows [5] 78/10 79/11 79/19
82/6 82/7
shall [1] 133/17
Sharon [2] 5/1 6/4
shifts [1] 17/9
shin [2] 94/19 94/21
shining [1] 78/22
Shirley [1] 7/20
shop [1] 45/9
short [1] 14/13
shorthand [1] 140/10
shortly [1] 27/23
shot [1] $43 / 8$
shots [1] 98/14
$\begin{array}{llll}\text { should [22] } 7 / 3 & 12 / 15 & 27 / 12 & 29 / 4\end{array}$
$32 / 832 / 938 / 1238 / 1653 / 1062 / 7$
64/17 65/16 78/20 78/25 82/6
82/6 88/7 88/8 89/14 126/13

## 131/2 138/4

shouldn't [3] 78/2 119/6 126/2
show [40] $4 / 23$ 10/15 27/13 37/13
45/19 45/20 50/1651/1 51/13 61/12 61/24 68/15 68/17 68/19 68/24 73/3 73/3 73/23 79/8 79/18 79/22 80/4 81/8 83/11 87/8 88/20 88/23 89/1 89/5 101/23 102/5
104/13 108/5 $115 / 22$ 117/12 122/6 129/22 130/1 130/11 130/12
showed [8] 23/6 44/22 63/8 67/6
98/10 99/14 108/14 129/24
showing [14] 8/11 9/10 16/23
50/15 54/17 75/22 79/6 83/10
106/24 127/14 127/20 127/22

## 128/2 132/8

shown [13] 31/11 58/2 79/5 79/11
87/6 89/19 90/15 107/20 115/19
120/11 120/20 126/22 133/3
shows [9] $36 / 1644 / 546 / 2347 / 1$
59/13 100/11 103/10 126/7 130/12 sic [1] 8/22
side [28] 5/12 7/11 49/24 50/9 55/7 57/15 58/18 59/10 60/2 75/13 75/14 75/15 77/877/21
$83 / 288 / 1388 / 2389 / 489 / 7107 / 5$
107/9 107/18 107/20 108/10
108/17 108/20 122/3 122/3
sides [2] 32/23 89/9
siding [1] 47/17
significance [4] 20/24 125/22
127/18 128/4
significant [3] 11/5 12/8 87/16
silver [1] 85/15
similar [4] 67/6 93/8 $125 / 1$ 125/4
similarly [2] 108/20 110/3
simple [1] 114/15
$\begin{array}{llll}\text { simpler [2] } & 30 / 25 \quad 108 / 25\end{array}$
simplest [1] 118/20
simply [22] 27/4 31/17 41/4 73/7
73/24 80/13 83/1 83/7 93/19
96/20 102/4 105/22 107/4 108/8
109/21 110/17114/8118/16
118/21 120/19 126/21 129/17
simulation [5] 123/11 123/12
123/16 123/17 123/22
simulations [3] 120/16 120/18
120/22
since [5] 13/6 34/3 121/2 131/6
132/13
single [1] 88/23
singular [1] 101/22
sir [66] 33/20 34/11 34/21 35/6
$35 / 1435 / 25$ 36/6 36/25 37/12
37/23 39/11 39/13 39/21 40/1
41/8 41/25 42/7 42/17 42/23
44/10 44/16 45/18 49/11 50/23
51/10 51/15 52/2 53/8 53/23
$54 / 1254 / 1654 / 1956 / 2057 / 14$
57/19 58/4 58/14 58/24 59/4
59/24 60/11 62/6 62/13 63/7
63/12 63/15 66/10 67/5 67/24
69/19 70/7 70/18 70/22 71/2 72/9
84/6 84/11 87/4 94/3 96/4 97/6
99/25 105/1 107/3 107/16 110/9
sit [2] 6/24 50/24
Sitting [1] 24/4
situation [1] 100/20
six [1] 42/12
size [2] 80/25 94/12
skeletal [12] 61/2 61/14 61/16 61/19 68/25 92/20 93/24 106/24 112/7112/17113/2 121/21
skeleton [6] 61/11 61/20 92/13
93/10 93/18 94/6
skinned [2] 9/4 9/8
Slaby [2] 4/24 6/3
slide [2] 59/6 105/2
slides [5] 31/10 57/7 88/4 128/24 129/9
slight [1] 114/18
slightly [2] 66/12 69/8
$\begin{array}{llll}\text { slippers [3] } & 101 / 18 & 101 / 25 & 102 / 5\end{array}$
slowed [1] 66/10
slower [2] 66/12 66/19
small [2] 45/10 90/21
smallest [1] 28/21
snowmobile [2] 55/6 55/6
snowmobiles [1] 84/12
software [17] 43/19 47/11 48/8
64/18 74/11 76/3 76/10 76/25
77/18 79/3 79/18 80/17 92/23
95/11 95/19 95/25 110/21
software's [1] 79/22
solid [1] 100/10
solve [1] 134/12
somebody [5] 17/20 73/17 95/19 96/14 113/19
somebody's [1] 103/12
someone [8] 12/5 27/8 71/9 73/11
85/7 90/8 104/14 135/8
something [40] 14/6 14/15 27/12
34/1450/25 55/18 59/15 62/20
71/24 72/17 73/7 75/2 82/11
86/1 5 89/3 89/1 8 90/1 95/13
95/16 95/24 96/1 97/7 99/10
100/21 101/13 104/7 108/25
109/23 $115 / 18$ 117/8 117/9 117/17
122/5 124/7 125/18 127/12 127/16
127/24 130/24 139/1
sometime [2] 63/10 138/25
somewhat [3] 15/12 64/12 83/14
somewhere [3] 32/5 97/22 136/9
son [2] 11/25 19/21
soon [1] 7/14
sorry [9] 31/13 44/9 48/6 54/23
57/13 59/9 91/14 107/22 108/6
sort [3] 88/14 101/13 110/23
sorts [2] 15/20 75/17
sought [1] 9/13
sound [2] 38/22 38/25
south [1] 59/7
southeast [2] 59/25 67/25
southeastern [1] 65/21
space [9] 40/5 40/21 46/12 46/19
70/5 75/23 80/16 93/11 95/13
spacial [2] 48/21 81/22
sparkle [1] 64/20
spatial [5] 56/13 75/7 114/9
114/18 122/6
speak [2] 91/9 98/4
speaking [1] 22/1
special [7] $1 / 12$ 1/14 1/16 4/8 4/12 20/24 129/18
specific [8] 34/5 35/1 45/12 80/2
85/6 94/17 94/24 133/19
specifically [8] 16/7 17/17 19/16
30/20 33/7 82/24 103/24 125/18
specified [1] 133/16
specify[3] $33 / 580 / 1880 / 18$
spectators [1] 86/18
speed [1] 67/2
spell [2] 33/14 39/25
spend [1] 36/2
spending [1] 101/14
spit [2] 77/18 77/18
split [3] 24/7 24/8 25/4
splitting [2] 23/2 23/23
spot [1] 80/15
spots [2] 72/23 73/1
spring [1] 80/20
$\begin{array}{llllll}\operatorname{Sr}[7] & 11 / 16 & 11 / 25 & 13 / 20 & 16 / 1 & 18 / 9\end{array}$
18/19 19/21
ss [1] 140/1
staff [3] 31/21 71/5 71/17
stain [4] 23/1 8 24/6 24/7 25/4
stains [8] 22/7 22/10 22/14 22/15
23/3 23/14 24/20 25/5
stake [2] 12/10 113/10
stand [4] 6/2 6/25 32/19 119/3
standard [3] 40/7 92/21 125/2
standards [1] 118/18
standing [4] 6/24 71/4 115/2 115/3
start [2] 29/4 108/22
started [2] 65/20 67/2
starting [2] 105/5 139/3
state [82] $1 / 11 / 31 / 131 / 151 / 17$
4/2 4/3 4/6 4/9 8/7 10/5 10/21
12/3 13/14 14/9 14/22 17/5 17/13
17/16 18/13 18/22 18/25 19/4
19/14 19/17 20/12 20/15 21/3
state...[54] 21/16 22/4 22/24 28/19 28/24 29/14 29/23 29/25 30/2 30/16 32/19 33/13 33/19 34/1 $34 / 234 / 634 / 735 / 335 / 1136 / 15$ 37/8 37/9 38/16 49/6 52/16 53/15 74/8 74/24 83/8 87/21 88/6 89/12 90/10 95/20 95/23 96/1 97/13 115/12 115/21 117/4 117/11 119/10 120/3 120/12 120/14 121/17 124/16 125/25 129/5 131/3 133/23 134/24 140/1 140/5
State's [9] 8/4 9/16 9/20 9/23 15/6 21/10 21/13 30/10 137/4 stated [1] 68/17
statement [6] 30/11 31/5 31/10
126/3 130/24 132/23
statements [4] 29/2 30/15 103/19 122/11
states [5] 10/1 13/7 13/11 68/18 134/16
station [29] 35/8 39/23 40/2 40/3
40/8 40/11 40/14 41/13 42/16
42/20 42/23 43/5 43/15 43/17
46/7 46/10 46/11 58/16 70/3 70/9
70/25 71/11 76/2 76/3 90/16
90/17 91/12 104/17114/13
statute [2] 133/14 133/16
Steinmetz[1] 6/7
stenographic [1] 140/9
step [5] 10/13 14/10 16/22 43/13 110/8
steps [1] 27/15
STEVEN [22] 1/7 1/22 4/2 4/14 23/7 29/23 30/5 52/1 57/4 57/4 57/8 57/21 60/2 63/4 66/14 67/17 67/18 68/14 68/18 110/6 134/22 137/3
stick [1] 76/17
Stienmetz [1] 5/6
still [10] 6/8 25/5 38/6 49/14 62/16 62/16 64/24 67/6 71/15 122/16
stipulate [1] 138/2
stipulated [1] 131/1
Stonebraker [1] 5/2
stop [4] 51/23 103/8 105/7 110/22
stopped [1] 111/2
stops [1] 123/24
storage [1] 45/8
stores [1] 43/15
story [1] 128/11
straight [4] 44/6 44/7 45/11 48/19
STRANG [27] $1 / 183 / 124 / 177 / 25$
10/10 30/6 30/22 38/11 51/23
63/20 69/23 72/2 98/7 98/19
108/6 112/2 121/10 122/16 123/2
129/16 129/21 131/20 132/25
133/7 136/1 136/3 138/19
Strang's [2] 118/13 121/22
strap [1] 102/19
stress [1] 26/18
stricter [1] 20/5
strike [8] 5/13 8/5 8/7 9/15 9/24
10/24 18/24 20/13
strikes [7] 1/4 3/4 5/21 5/23 8/5 10/17 14/19
striking [4] 9/12 16/19 20/9 86/5 strong [1] 78/22
strongly [1] 19/19
struck [5] 8/14 12/15 13/10 14/21 126/16

Structural [2] 92/18 92/19
strung [1] 41/14
stuff [1] 86/2
stunning [1] 10/9
subject [2] 14/16 27/21
submit [1] 133/22
submitting [2] 138/14 138/18
substantial [1] 29/11
substantive [2] 29/16 137/1
substrate [1] 24/22
such [5] $45 / 1988 / 1190 / 11116 / 21$
129/25
sufficient [5] 12/9 16/16 22/5 22/6 23/13
suggest [5] 12/9 19/20 20/13 80/6 134/1
suggested [1] 32/21
suggesting[5] 10/19 75/14 80/15 82/9 89/13
suggestions [1] 134/9
Suite [1] 136/8
summer [1] 80/20
sun [8] 78/22 79/21 79/23 79/25
80/6 81/3 82/4 82/5
Sunday [3] 134/7 138/8 138/20
supervision [2] 49/18 107/13
supplement [1] 121/10
supplied [1] 73/8
support [1] 18/20
suppose [3] 73/19 77/17 81/12
supposed [6] 72/13 72/15 72/16
72/25 96/18 137/3
$\begin{array}{llllll}\text { Supreme [5] } & 13 / 7 & 13 / 11 & 14 / 8 & 14 / 9\end{array}$ 16/10
surface [1] 70/24
surfaces [1] 47/4
surrounding [4] 36/18 57/6 63/5
115/14
surveyed [1] 104/16
suspect [5] 11/11 17/24 21/18
126/23 133/1
Suzuki [3] 55/3 55/7 84/13
switches [1] 102/11
sworn [2] 25/25 33/11
sympathetic [1] 21/1
system [5] 38/22 38/25 39/4 40/7 49/22
table [7] 33/3 33/6 85/14 85/16 85/19 85/22 $114 / 9$
take [26] 7/10 14/12 25/11 27/14
28/16 36/3 47/11 47/14 47/21
49/1 49/7 54/25 58/10 64/7 66/25
70/10 70/17 75/12 76/8 81/14
98/14 110/3 110/15 111/12 114/8 117/24
taken [29] 7/13 7/22 14/25 36/15
37/7 39/22 41/7 42/15 42/17 45/10 52/4 52/10 68/8 78/16 84/23 84/25 85/9 91/1 91/4 94/14 97/13 98/20 99/14 111/23 113/21 115/21 124/18 135/12 140/9
takes [2] 117/13 132/17
taking [9] 23/9 40/12 40/15 40/21
41/18 42/9 63/1 67/11 123/13
talk [13] 38/25 43/14 50/14 51/6 51/951/1251/13 56/21 58/1 62/10 112/21 120/2 121/24
talked [4] 23/2 65/23 105/24
119/19
talking [16] 37/14 39/2 44/15
56/15 79/2 79/12 101/25 119/13

120/8 120/10 120/11 120/18
120/18 120/25 121/12 131/25
talks [1] 39/2
tall [6] 71/12 71/13 94/11 94/12 97/25 138/21
Tami [1] 5/4
tape [10] 41/4 41/10 41/15 96/7
96/8 96/15 96/18 96/23 103/13 125/10
task [1] 60/14
teach [1] 96/2
team [1] 36/7
technical [3] 34/8 69/14 90/9
technically [2] 108/21 109/3
technology [3] 35/8 46/1 46/3
television [1] 27/5
tell [31] 34/19 36/13 37/5 39/20 40/15 43/12 43/24 46/22 50/6 50/9 53/7 54/13 55/1 56/23 59/2
59/23 60/23 62/14 63/16 66/9 71/11 71/12 73/13 76/24 77/2 77/19 85/17 96/20 97/3 98/12 106/4
telling [2] 39/19 73/12
Temme [2] 4/25 6/3
tends [1] 123/25
tent [3] 129/14 130/12 130/12
tentatively [2] 15/3 15/4
Teresa [1] 58/9
term [8] 34/12 74/7 74/9 74/10
74/16 74/22 93/6 101/3
terms [3] 41/9 57/11 75/11
Terri [2] 4/24 6/3
Tesheneck [3] 2/1 140/4 140/19
test [9] 14/5 17/2 17/7 19/7 20/3
20/6 22/3 22/3 23/19
tested [4] 22/8 22/11 22/15 22/16
tester [1] 23/17
testified [2] 33/12 119/2
testifies [1] 127/11
testify [3] 48/13 48/15 107/25
testifying [1] 127/15
testimony [7] 28/24 29/9 36/11
50/22 56/19 111/15 122/22
testing [4] 22/6 23/6 24/3 24/21
text [9] 52/22 53/2 66/2 66/5 68/7
68/17 107/14 108/2 108/19
textural [1] 110/16
texture [13] 47/9 47/12 48/3 48/9
61/22 64/21 72/14 73/22 74/2
81/11 93/13 100/8 100/24
textures [6] 47/3 47/7 47/20 47/24
61/1779/9
thank [17] 6/11 8/1 10/8 14/24
28/4 32/18 $41 / 2544 / 1269 / 21$
69/24 70/2 108/12 118/12 131/16 132/6 132/16 139/13
Thanks [1] 111/7
their [17] 4/3 5/20 14/19 20/18
30/1 33/3 35/23 50/21 68/5 80/22
80/25 83/9 90/5 92/17 92/17 121/15 121/16
them were [1] 23/5
themselves [4] 12/6 72/11 104/23 105/20
theory [2] 135/8 137/5
there's [42] 9/9 13/19 17/1 28/17 29/1 5 49/23 52/22 55/3 55/6 55/10 55/10 55/11 66/22 66/23 69/8 72/19 81/1 82/14 85/14 87/15 87/25 99/22 108/17 109/20 110/24 113/18 114/24 115/8 116/21 119/23 122/9 123/10 126/8
there's... [9] 126/17 126/23 127/23 128/5 128/17 129/17 132/2 132/8 138/21
thereafter [1] 140/11
therefore [4] 64/13 64/20 99/9 123/6
therefrom [1] 46/8
these [53] 24/20 27/3 36/5 36/19 42/9 49/7 50/10 50/17 51/4 53/8 53/10 53/11 53/15 59/22 61/12 61/14 65/4 66/17 66/20 67/9 67/16 69/15 74/13 79/8 79/13 79/13 80/13 81/21 82/7 82/10 83/13 84/17 88/4 90/18 97/8 98/10 98/15 103/8 103/15 104/19 107/12 113/25 115/9 118/16 119/7 119/24 120/14 120/15 121/11 121/16 122/13 122/20 128/17
thing [14] 21/25 28/9 50/23 74/19 81/4 92/15 102/3 111/3 113/23 114/22 119/13 126/20 127/19 134/13
things [19] 44/14 66/4 67/9 75/22 83/19 83/20 84/23 85/23 87/11 87/19 89/2 103/10 114/21 116/25 122/18 123/18 123/20 128/22 135/18
think[68] 9/9 9/14 11/7 11/9 13/13 15/13 15/15 15/16 22/13 22/21 23/25 24/11 24/17 27/10 28/15 38/14 38/24 39/3 39/5 39/1 8 49/14 52/7 53/5 62/18 63/13 70/12 73/1 89/4 94/2 94/2 98/2 100/22 105/24 106/22 110/18 110/20 112/1 112/4 112/6 112/10 112/10 112/16 112/19 114/4 117/11 118/4 119/23 119/24 124/6 125/2 131/2 131/11 131/20 132/4 134/12 134/16 134/18 134/19 135/11 135/15 136/1 136/7 136/10 136/20 137/20 137/23 138/17 139/8
thinks [1] 136/1
thinner [2] 105/24 106/4
third [2] 19/6 95/8
THOMAS [1] 1/14
Thorne [2] 5/1 6/4
thorough [1] 20/5
those [75] 6/8 6/23 7/17 8/3 8/16
8/24 13/2 14/21 23/5 23/7 23/9
26/14 27/14 31/11 38/4 42/10 $42 / 12$ 47/7 50/20 53/8 54/2 54/3 54/7 54/13 56/13 57/25 57/25 62/1 62/16 62/20 65/22 68/4 68/5 68/11 68/13 68/21 68/22 73/6 75/17 75/19 76/9 76/19 76/21 $77 / 482 / 1382 / 1783 / 187 / 488 / 20$ 90/24 90/25 92/11 97/14 98/17 98/23 99/2 99/11 99/15 101/21 103/18 104/18 105/20 107/4 107/6 109/18 $110 / 15119 / 19$ 120/23 121/24 122/24 131/15 133/4 133/4 134/5 135/23
though [3] 31/15 49/11 113/11 thought [5] 10/23 11/13 72/22 104/5 131/25
thousand [1] 41/15
three [34] 12/23 14/10 23/5 23/7 32/9 35/16 38/14 41/6 43/1 43/5 $46 / 847 / 147 / 447 / 1848 / 1149 / 1$ 49/21 56/4 56/8 56/15 57/1 67/1
$74 / 674 / 1576 / 976 / 976 / 1376 / 18$
76/20 77/3 77/4 93/6 95/3 95/13
threshold [1] 17/9
through [15] 42/16 43/23 53/4
62/20 62/24 63/3 65/18 69/2 70/5
79/17 100/19 103/7 112/7 118/3
134/14
throughout [1] 88/3
tilt [1] 78/21
TIM [3] 3/10 32/19 33/8
time [45] 4/1 4/21 5/24 6/22 6/25
7/17 15/1 18/13 26/4 26/4 27/20
29/22 36/2 38/2 38/13 39/3 42/4
$42 / 842 / 1454 / 4$ 70/24 80/1 80/2
83/4 83/21 83/25 85/9 87/24 88/2
91/7 91/19 99/3 101/14 108/24
110/16 111/12 111/19111/24
120/5 125/5 125/14 127/6 132/14
132/21 138/19
times [3] 91/2 91/6 91/13
TIMOTHY [3] 33/10 33/15 33/20
tipping [1] 120/4
tire [2] 97/3 115/18
today [14] 22/1 26/17 27/21 30/11
33/4 36/11 46/5 49/14 68/7
115/17 132/18 133/2 133/9 139/15
together [2] 51/22 136/22
told [6] 87/7 88/12 101/6 102/4
104/14 121/18
Tom [2] 4/9 30/3
took [9] 35/22 39/19 58/12 72/23
86/22 91/3 103/4 103/16 106/3
tool [3] 55/10 77/10 77/16
tools [2] 55/9 77/1
top [7] 66/11 76/5 76/18 85/22
104/3 105/25 117/16
topic [1] 116/4
Total [28] 35/8 39/22 40/2 40/3
40/8 40/11 40/14 41/13 42/16
42/19 42/23 43/5 43/15 43/17
46/7 46/10 46/11 58/16 70/3 70/9
70/25 71/11 76/1 76/3 90/16
91/12 104/17114/13
totality [2] 20/16 20/22
tour [2] 110/22 116/12
toward [1] 112/13
towards [2] 33/18 40/24
toy [1] 62/19
track [1] 115/5
tractor [1] 84/9
traditional [1] 113/24
trailer [10] 54/9 59/9 71/25 77/9
77/21 96/4 115/14115/14118/1
118/7
trainer [1] 95/24
training [4] 34/15 34/23 35/1 74/18
transcribed [1] 140/11
transcript [4] 1/25 13/25 140/8 140/12
transcription [1] 140/11
transportation [2] 26/11 27/22
tree [5] 75/16 80/15 80/22 81/8
81/11
trees [9] 78/11 79/13 79/14 79/20 80/10 80/13 80/1 8 80/22 80/24
tremendous [1] 128/7
trial [19] $1 / 4$ 5/17 26/12 26/20
26/22 26/25 27/4 27/17 27/19
43/24 50/1 58/20 $119 / 21$ 121/7
125/7 127/8 133/5 133/11 133/20
trials [1] $45 / 16$
tried [1] 97/9
trier [6] $48 / 1755 / 1755 / 25$ 64/25
119/25 121/8
triers [1] 45/16
trooper [14] 3/10 33/10 33/25 34/2
36/16 42/14 44/13 55/15 60/6
97/14 98/13 98/25 112/24 133/1
trouble [1] 109/24
troublesome [1] 134/19
truck [2] 48/1 48/2
true [6] 20/19 69/16 75/24 107/2 113/25 140/12
truss [9] 103/25 104/15 $117 / 10$ 117/10117/13 123/19 127/16 127/21 128/1
trusses [2] 104/12 122/19
trusted [2] 93/21 93/21
truthful [4] 12/14 17/17 19/23 19/24
try [9] $12 / 16$ 29/13 67/1 70/7
74/24 79/16 81/13 136/19 136/19
trying [6] 11/23 53/13 71/10 73/13
74/4 129/8
turn [1] 82/4
turned [5] 51/20 54/20 79/21 80/1 82/5
turning [2] 40/23 81/3
turns [1] 11/15
TV [1] 27/13
two [28] 8/24 12/22 17/13 25/21
29/10 32/8 40/25 43/14 44/1 44/5 45/14 45/18 46/2 46/5 48/16 48/18 52/19 57/25 71/1 78/11 83/9 84/12 87/13 89/9 95/5
129/12 131/12 132/17
two-man [1] 71/1
type [11] 27/15 38/20 47/7 48/21
61/17 73/4 79/14 98/25 126/20 126/22 127/19
types [1] 80/18
typical [2] 49/24 50/9
typically [4] 40/8 89/16 89/21 90/10
U
ultimate [1] 24/10
ultimately [5] 9/3 9/12 35/15
36/23 69/1
unbalance [1] 122/20
uncertain [1] 11/6
unconverted [1] 121/3
under [16] 8/7 9/25 12/12 19/12
20/15 20/19 22/9 49/17 60/11 61/6 96/8 107/13 124/25 134/14 134/14 137/1
underlying [1] 31/8
underneath [4] 38/18 52/11 70/10 79/6
understand [20] 17/14 40/9 44/15
45/17 45/25 51/3 58/25 70/3 $81 / 15$ 83/5 83/23 85/10 85/13 101/12 102/15 114/17 125/11 131/17 138/24 138/24
understanding [14] 22/4 23/12
24/17 37/22 49/3 58/21 58/24
65/11 67/24 87/10 108/16112/23 133/21 139/1
understands [2] 36/19 115/25
understood [2] 74/22 114/14
unfair [2] 117/20 122/10
unfolds [1] 133/5
Ungrodt [1] 4/25
unhelpful [1] 124/14
uninitiated [1] 86/22
unit [5] 34/8 40/12 90/9 92/18 92/20
United [3] 10/1 13/7 $13 / 11$ unknown [1] 107/17
unlabeled [7] 52/13 52/20 53/11
53/17 92/14 109/10 112/13
unless [4] 10/18 27/7 85/8 127/6
unreasonable [2] 109/5 109/6 unrendered [3] 47/1 47/2 79/4 unreversed [1] 137/17
until [4] 5/22 26/20 129/14 133/3
untruthfulness[1] 21/18
unusual [1] 127/7
up [31] 19/18 19/18 23/16 27/11 29/13 31/22 32/21 37/13 38/12
39/4 43/22 53/6 59/6 66/6 67/2
70/9 79/14 83/15 83/15 89/22
90/21 91/17 97/21 104/5 106/12
106/23 111/2 113/17116/25 127/8 128/22
upfront [1] 137/21
upon [4] 12/13 24/22 42/19 125/9 upper [1] 44/23 ups [1] 61/24
us [48] 11/21 12/7 12/9 12/25 25/1 $32 / 234 / 2036 / 1337 / 537 / 13$ 37/13 39/19 39/20 39/25 40/15
42/25 44/22 46/14 46/18 46/22
47/1 1 48/20 49/10 53/7 55/1
56/23 57/22 59/2 59/18 60/23
62/14 63/16 67/6 75/22 78/3 81/17 94/5 94/5 96/20 97/3 100/9 100/12 101/1 101/3 101/6 102/6 109/7 111/19
use [36] 8/4 9/23 30/9 31/12 33/3
35/3 35/4 35/7 42/16 42/20 44/13 $45 / 1850 / 150 / 2053 / 15$ 55/13
74/7 74/9 76/9 77/17 90/14 94/25 95/21 98/18 98/18 99/9 99/24 104/17 107/6 108/25 110/23
122/12 128/23 129/5 130/23 136/9
used [13] $21 / 17$ 30/15 40/8 43/19
45/15 45/24 69/1 74/10 74/12
82/22 98/21 118/10 126/2
useful [3] 75/21 94/24 127/13
using [11] 27/11 31/4 31/9 39/22
66/1 74/12 77/13 91/8 105/2
108/10 112/19
usually [1] 88/21
utilize [2] $40 / 11$ 98/12
utilized [3] 67/1 73/25 98/16

## V

valid [1] 18/23
value [7] 59/12 65/25 89/4 104/20
105/15 118/23 125/10
van [2] 58/2 58/14
variables [3] 126/12 131/13 131/15
various [10] 15/20 52/6 52/23 53/2
55/9 55/12 61/3 61/19 77/1 79/9
vary [2] 24/21 80/22
vehicle [8] 24/4 25/5 55/4 58/5
58/9 97/2 98/17 130/21
vehicles [2] 47/5 92/4
venire [1] 10/18
verbally [1] 50/24
verdicts [2] 5/19 26/20
verify [3] 11/6 11/23 12/16
vernacular [1] 9/9
version [13] 37/16 63/18 63/20
64/9 64/10 66/7 67/16 79/6 96/12

103/2 103/6 104/1 133/1
versions [3] 53/11 53/11 109/16
versus [1] 48/16
vertically [1] 70/20
very [32] $4 / 18$ 10/10 $12 / 5$ 14/6
24/16 25/15 31/22 32/3 38/10
40/1 5 41/24 42/24 45/18 50/9
54/25 67/22 70/2 77/10 80/23
86/21 90/20 91/25 101/18 106/20
106/21 108/21 114/22 124/2
124/10 131/16 132/6 132/16
vessel [1] 108/17
vial [3] $22 / 5$ 23/2 23/23
video [3] 113/17 113/24 118/2
videotape [3] 124/18 124/23 125/8
view [12] 44/6 57/12 77/14 77/15
79/10 97/20 98/4 99/11 116/11
117/14 122/4 123/8
viewed [3] 49/9 69/10 126/15
viewpoint [1] 56/13
views [1] 106/24
Virginia [1] 61/18
virtual [3] 72/22 110/22 116/12
visual [1] 75/17
visualize [2] 48/24 56/2
vitae [2] 34/10 34/22
vital [2] 27/9 128/9
vocabulary [1] 113/7
voir [3] 15/20 15/25 27/11
volume [2] 31/24 32/6
W
wait [1] 134/23
walk [2] 63/3 118/3
wall [14] 100/2 100/3 100/4 100/8 100/10 100/11 100/13 100/13 100/18 100/25 100/25 102/1 102/5 102/7
walls [1] 55/9
want [22] 6/11 21/25 22/12 24/15 24/24 26/17 39/2 45/1 62/18 70/3 82/10 89/22 101/2 111/15 111/19 113/19 113/20 115/15 125/24 134/13 136/13 137/9
wanted [11] 9/14 11/6 12/16 31/17 31/25 61/1 77/12 77/12 89/19 97/19 97/25
wants [2] 117/4 131/3
Wardman [2] 5/6 6/7
warrant [1] 87/24
warrants [2] 35/23 91/22
wash [1] 112/20
wasn't [5] 67/4 84/23 93/14 99/2 126/16
waste [1] 106/18
watch [2] 26/24 27/5
watching [1] 27/13
watering [1] 113/20
way [20] $25 / 25 \quad 36 / 23 \quad 48 / 5 \quad 55 / 22$
58/7 59/22 64/18 69/12 69/13
79/10 86/23 90/7 92/8 99/19
$\begin{array}{lllll}114 / 14 & 115 / 8 & 122 / 5 & 123 / 21 & 128 / 6\end{array}$ 136/25
ways [1] 88/4
we [245]
we'll [15] 14/13 29/18 38/23 39/6 66/15 66/15 88/21 111/12 112/2 115/10 122/16 122/24 137/12 138/13 139/10
we're [57] 14/15 30/7 31/18 36/13
38/6 39/8 43/24 46/4 48/19 50/3
$51 / 1451 / 1651 / 2553 / 2056 / 23$
58/1 59/2 59/7 59/17 59/23 60/2

61/12 62/22 62/23 65/10 65/22
66/20 67/7 67/10 67/12 67/14
67/24 67/25 68/1 68/13 68/15
68/23 68/24 95/5 100/5 100/18 111/24 112/10112/13115/5 115/16 116/3118/18120/7120/10 120/18 120/25 121/12 121/18 131/25 139/3 139/14
we've [1] 97/21
week [8] 5/10 63/9 64/9 66/3
66/19 69/10 115/22 132/25
week's [1] 67/16
weekend [2] 133/25 134/6
weight [1] 118/15
welder [3] $55 / 11106 / 13106 / 19$ went [3] 15/16 71/24 86/6
weren't [6] $11 / 184 / 2585 / 285 / 4$ 87/6 87/7
west [1] 45/7
what's [10] 34/18 37/4 37/10 39/5 48/20 52/11 54/17 54/21 92/22 114/1
whatever [10] 16/11 22/4 23/17
24/23 41/22 52/16 93/2 112/15 116/15 127/10
whenever [1] 41/22
Wherein [1] 25/22
whether [25] 13/19 16/4 17/18
18/2 18/3 18/14 23/15 24/6 29/15
$34 / 2582 / 382 / 482 / 6$ 91/12 93/1 8
96/23 104/23 114/12 117/22
118/16 $118 / 22118 / 22119 / 17$
122/19 128/6
while [8] 19/16 20/19 26/9 27/13
32/20 67/10 84/10 84/22
white [4] 9/8 37/12 47/5 104/1
white-skinned [1] 9/8
who's [2] 20/20 76/16
whole [2] 85/11 130/21
whom [3] 8/12 11/16 137/2
wide [1] 13/25
Wiegert [1] 82/20
William [2] 5/4 6/6
willing [1] 128/15
Willis [1] $1 / 10$
window [1] 75/16
Windows [1] 136/8
Wis [1] $119 / 12$
WISCONSIN [22] $1 / 11 / 31 / 131 / 15$
$1 / 17$ 4/2 4/6 10/3 14/8 14/9 16/10 29/23 33/25 34/7 35/11 89/11
90/9 95/20 95/23 $119 / 11140 / 1$ 140/6
wish [3] 7/5 30/23 137/15
wished [1] 133/22
wishes [6] 21/22 28/19 31/11
52/16 129/5 134/2
wishing [1] 16/4
withdraw [1] 113/1
withdrawal [1] 121/23
within [5] 43/5 69/17 77/6 113/17 120/20
without [15] 16/1 16/12 35/19
55/15 56/7 61/17 86/19 87/6
102/9 109/5 109/24 110/20 119/4 119/4 131/19
withstanding [1] 13/1
witness [12] 33/11 41/21 68/10
111/11 112/14 117/14119/3 127/4
127/7 127/11 127/14 127/23
witnesses [3] 3/9 65/1 122/12
wonder [1] 135/25
Wonderful [1] 32/17


